



BHAKRA BEAS MANAGEMENT BOARD

From

मुख्य अभियंता / उत्पादन
बीबीएमबी, नंगल |

Tel No. 0172-2637157, 01887-223355

Fax No. 0172-2652820, 01887-223307

To

M/s HCL Infosystems Limited
SC0 66-67, SECTOR-17 A,
Chandigarh - 160017
Fax No. 0172-2704961
Tel. No.: 0172-2708088,2708072

Memo No. 727 /EDP/COMP/106

Dated: 3/10/2011

Sub:- PURCHASE ORDER FOR SUPPLY AND COMMISSIONING OF SERVERS, UPSs, NETWORKING EQUIPMENT, FACILITY MANAGEMENT SERVICES etc. INCLUDING BUY-BACK OF EXISTING EQUIPMENT - SPECIFICATION NO. 76 /DPR/SSM/4/2011 (NIT No. 91/DPR/SSM/2010)

- Reference i) Your quotation/bid submitted on line at the portal <http://bbmb.abcpurchase.com>.
 iii) This office letter no. 876/EDP/COMP/106 dated 28/6/2011.
 ii) Your clarification submitted vide letter no HCL/CHD/HG/BBMB/300611 dated 30/6/2011.
 iii) This office LOI letter no. 682/EDP/COMP/106 dated 15/9/2011.

Dear Sir(s)

With reference to the letters/fax messages mentioned above, purchase order for supply and commissioning of Servers, Software, UPSs, Networking equipment, Facilities Management Services and other equipment & services as per the Guaranteed Technical Particulars, at rates, terms and conditions mentioned as under is placed upon you:

S. No.	DESCRIPTION	Quantity	UNIT PRICE inclusive of Excise, Custom Duty, Freight & Forwarding, Insurance, Installation & Commissioning Charges	CST / ST (In Figure)	Service Tax (In Figure)	Total Unit Price F.O.R Destination incl. of CST/ST, Service Tax, Freight & Forwarding, Custom Duty, Insurance, Installation & Commissioning Charges etc.	Total Amount F.O.R Destination incl. of CST/ST, Service Tax, Freight & Forwarding, Custom Duty, Insurance, Installation & Commissioning Charges etc.
			All figures in Rs.				
1	2	3	4	5	6	7	8=7*3
1	HARDWARE - SERVERS & COMPUTERS						
	Blade Servers						
1.1	Blade Servers (Type -1)	2	181500	9075	0	190575	381150
	CPU Server class chipset 5600 Series processors to be configured with two 2.4 GHz, 1333 FSB, 80W - Quad-core processor.						
	Memory Server should be supplied with 24 GB memory and scalable to 96 GB. The server should provide Twelve (12) DDR3 Registered or Unbuffered DIMM Memory Slots. Should support Advanced memory protection technologies like AECC, memory mirroring and memory lockstep mode.						

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	HDD Should be configured with 2 x 146GB @ 15k rpm SAS drives. The internal storage should be configured in RAID 1 for OS. Hard drives to be hot-pluggable and of small form factor. Storage controller capable of providing RAID 0, 1 configurations with upgradeability to 256 MB Battery Backed Up Write Cache						
	Expansion Slots / Ports Should have a minimum of 2 PCIe based slot and simultaneously host interconnects of Ethernet,FC fabrics. Server to provide two network ports for connectivity to Ethernet switch. Should have Lan-on-Motherboard feature providing 10Gb speeds in the design supporting technologies in TOE,iSCSI and RDMA Ports to be available for USB,Network and management						
	Management Should provide remote management software capable of providing graphical interface, virtual media and multi-factor authentication. Server management software capable of providing role-based security, alerts of critical component failure (Hard drive, memory, CPU) and notify the same using email, SMS.						
1.2	Blade Servers (Type -2)	3	561000	28050	0	589050	1767150
	CPU Configured with 4 * 6540 Hexa Core processor & scalable to four processor on same chipset with in the box.						
	Memory Server should be supplied with 32 GB memory and scalable to 1TB.Should support Advanced memory protection technologies like ECC,memory mirroring and memory lockstep mode.						
	HDD Should be configured with 2 x 146GB @ 15k rpm SAS or SSD drives. The internal storage should be configured in RAID 1 for OS. Hard drives to be hot-pluggable and of small form factor. Storage controller capable of providing RAID 0, 1 configurations with upgradeability to 256 MB Battery Backed Up Write Cache						
	Expansion Slots / Ports Should have a minimum of 4 PCIe based slot and simultaneously host interconnects of Ethernet,FC fabrics. Server to provide two network ports for connectivity to Ethernet switch. Should have Lan-on-Motherboard feature providing 10Gb speeds in the design supporting technologies in TOE,iSCSI and RDMA Ports to be available for USB,Network and management						
	Management Should provide remote management software capable of providing graphical interface, virtual media and multi-factor authentication. Server management software capable of providing role-based security, alerts of critical component failure (Hard drive, memory, CPU) and notify the same using email, SMS.						

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1.3	High Performance,GPS based Network Time Server.		1	550000	68750	0	618750	618750
	Network Protocols							
	NTP (v2-RFC1119.v3-RFC1305, v4-No RFC)	SNMPv1, v2c, v3 (RFC3584)						
	NTP Unicast, Broadcast, Multicast, Autokey	MIB II (RFC1213)						
	SNTP Simple Network Time Protocol	DHCP (RFC2131)						
	(RFC4330)	Telnet (RFC854)						
	TIME (RFC868)	MD5 Authentication (RFC1321)						
	DAYTIME (RFC867)	RADIUS (RFC 2865)						
	HTTP/SSL/HTT PS (RFC2616)	SMTP Forwarding						
	SSH/SCP (Internet Draft)	IPv4, IPv6 and IPv4/IPv6 Hybrid						
	Key management protocols can be individually disabled							
	LAN 1: Management & Time protocols; LAN2, 3 & GbE	Time protocols only						
	Server Performance							
	7000 NTP requests per second while maintaining accuracy associated with reference time source. The accuracy is inclusive of all NTP packet delays in and out of the SyncServer as measured at the network interface. Client synchronization accuracy to server on a LAN is 0.5-2 milliseconds (typical). The Syncserver easily supports many hundreds of thousands of NTP clients. NTP request handling capacity remains the same regardless of Stratum level							
	Stratum 1 via GPS: Overall time stamp accuracy of 7 microseconds to UTC with a variation of less than 42 microseconds typical							
	Stratum 1 via Dial-up modem:<50 milliseconds to UTC (<20 ms tpycial)							
	Stratum 2: Peering can be used as the primary mode of operation or as a back up mode in case the primary reference signals are lost. Time stamp accuracy depends on NTP peer server (s).							
	Holdover Accuracy/Oscillator Aging							
	TCXO (Standard)	18 milliseconds/day <1E-06/month						
	OCXO (optional)	1 milliseconds/day <1E-07/month						
	Rubidium (optional)	6 microseconds/day <5E-11/month						
	GPS Receiver/Antenna							
		12 channel parallel receiver						
	Minimum number of satellites for time	1 intermittently						
	GPS Time traceable to UTC (USNO)							
	Accuracy	<50 ns RMS, 150 ns peak to						

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		peak to UTC, ≥4 satellites tracked						
	Internal Analog Modem							
		Telecom approved in more than 50 countries						
	Time Encoding	ACTS, JJY and ITU -R TF583.4						
	Mechanical / Environmental							
	Size	1 U rack mount						
	Power	100-240 VAC, 50-60 Hz, 25 watts						
	Certifications	FCC, CE (RoHS), UL, PSE						
	Front Panel							
	Display	Sharp, high -resolution 32x256 dot-matrix						
		vaccum-fluorescent. 1, 2 or 4 line						
	Keypad	0-9 numeric, up down, left, right, ENTER, CLR						
		TIME, STATUS, MENU. Keypad lockout						
	LEDs							
	Sync	Time reference status						
	Network	Network connection status						
	NTP	NTP activity						
	Alarm	Fault condition						
	Serial	DB9-F 9600, N, 8, 1						
	USB	For back up, restore and upgrade operations						
	Rear Panel							
	Network (4x)	1x RJ-45 10 Base-T/100Base-Tx/1000Base-T Gigabit Ethernet						
		3x RJ-45 10Base-T/100Base-TX Ethernet						
		Speed/Duplex: Auto, 10/full/half, 100/full/ half						
	Sysplex	DB9-M RS-232						
	GPS	BNC L1, 1575 MHz						
	IRIG in:	BNC IRIG A/B/E/G/NASA36/XR3/2137/IE EE-1344						
		AM: 1V to 8 V p-p, Zin>5K ohms						
		DCLS:<1.5 V for logic 0. >2.4 V for logic1						
	IRIG out:	BNC IRIG A/B/E/G/NASA36/XR3/2137/IE EE-1344						
		AM: Ratio 3:1 +/- 10%, AMP: 3.5 +/- 0.5 V pp, Z out 50 ohms						
		DCLS:<0.8 V for logic 0. >2.4 V for logic1, Zout 50 Ohms						
	1 PPS-in	BNC Rising edge active, TTL into 270 ohms						
	1 PPS-out	BNC Rising edge on-time, TTL into 50 ohms						
	10 MHz-in	BNC Sine wave or square wave, 1Vpp to 8Vpp, Zin>50K ohms						
	10 MHz-out	Sine wave >2Vpp & <6Vpp into						

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		50 ohms						
		Sine wave>6Vpp & <8Vpp no load						
	Modem	RJ-11 analog phone jack						
	Radio	BNC, optional antenna required for operation						
	Relays	2x, SPDT (Form C)						
1.4	Cabinet/Chassis for Blade Servers with following configuration		1	627000	31350	0	658350	658350
	Chassis Support for full height and half height blades in the same enclosure holding upto 14 Intel Xeon Servers. Same enclosure should support Intel Xeon/AMD Opteron/RISC/EPIC based blades Same enclosure should support server, storage and expansion blades to enable consolidation of hardware .Should support simultaneous housing of Ethernet,FC,iSCSI,IB interconnect fabrics offering Hot Pluggable & Redundancy as a feature for the mentioned I/O devices							
	Ethernet Switch Ethernet Switching Modules to be provided in redundant configuration for Connecting to all the blade servers to external Switch. Configuration should help minimize the Ethernet Cables							
	SAS Channel Modules The Blade Chassis should be configured with redundant SAS SAN Switches.							
	Management Module System Management Port to allow simultaneous management access of multiple Blade Servers in the Chassis. GUI, console-based deployment server to set up multiple OS and application configurations and Drag-and-drop servers into configurations							
	Power Modules The enclosure should be populated fully with power supplies of the highest capacity available with the vendor. Power supplies should support N+N as well as N+1 redundancy configuration, where N is greater than 1.Should offer choice of a single phase or 3 phase power subsystem for flexibility in connecting to datacenter power enabled with technologies for lower power consumption.Guaranteeing complete availability even on failure of any 2 power units across the enclosure.							
	Cooling Each blade enclosure should have a cooling subsystem consisting of redundant hot pluggable fans or blowers enabled with technologies for improved power consumption and acoustics							

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	<p>Management Software</p> <p>Should be able to perform comprehensive system data collection and enable users to quickly produce detailed inventory reports for managed devices. Software should save the Reports for further analysis.</p> <p>Should provision for a single console to monitor multiple enclosures</p> <p>Should support simultaneous remote access for different servers in the enclosure</p> <p>The management/controlling software's must be from the OEM itself. Management Software Licenses for a fully populated Blade Enclosure should be given. The software should provide Role-based (admin, user, operator, etc) security which allows effective delegation of management responsibilities by giving systems administrator's granular control. The management software should provide proactive notification of actual or impending component failure alerts.</p> <p>Should support automatic event handling that allows notification of failures via e-mail.</p> <p>Should be able to perform comprehensive system data collection and enable users to quickly produce detailed inventory reports for managed devices. Software should save the Reports in some format for further analysis.</p> <p>Should help to proactively identify out-of-date BIOS, drivers, and Server Management agents and enable the remote update of system software/firmware components. The server performance monitoring software should be able to detect, analyzes, and explain hardware bottlenecks. Also it should be able to log the data over time and allow it to replay the same in a short time frame for performance analysis.</p> <p>The Deployment software should provide for User friendly GUI/ console-based deployment to set up and install multiple OS and application configurations in individual blade server.</p> <p>The blade system should have the capability of managing all the blades in the Enclosures simultaneously capable of monitoring both physical and virtualized environments with single signon capability for all devices in the enclosure</p>						
	Storage (Internal or External)						
	<p>Operating System & Clustering Support</p> <p>The storage array should support industry-leading Operating System platforms including: <i>Windows 2008</i></p> <p>Offered Storage Shall support all above operating systems in Clustering.</p>						
	<p>Capacity & Scalability</p> <p>The Storage Array shall be offered with 3.0 TB Capacity using 300GB drives.</p> <p>Storage shall be scalable to minimum of 90 number of drives or greater than 25TB using 300GB SAS drives.</p>						
	<p>Front-end Ports</p> <p>Offered Storage subsystem shall have total of 8 number of native SAS ports running at 6Gbps speed.</p>						

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	Back-end Offered Storage subsystem back-end engine shall be running on latest SAS (6Gbps) loop speed.						
	Architecture Offered storage subsystem shall be end to end 6Gbps SAS. The storage array should support dual, redundant, hot-pluggable, active-active array controllers for high performance and reliability						
	No Single point of Failure Offered Storage Array shall be configurable in a No Single Point of configuration including Array Controller card, Cache memory, FAN, Power supply etc.						
	Disk Drive Support Offered Storage Array shall support minimum 146/ 300 / 450/ 600GB hot-pluggable Enterprise SAS hard drives along with S-ATA (1000 & 2000GB) drives. For green datacenter initiative, Storage subsystem disks shall support Spin down feature for drives						
	Cache Offered Storage Array shall be given with Minimum of 2GB cache per controller in a single unit after removing the operating system overhead. Cache shall be backed up in case of power failure for indefinite time either using batteries or capacitors or						
	Raid Support Offered Storage Subsystem shall support Raid 0, 1, 1+0, 3, 5, 5+0 and Raid 6 with Dual Parity Protection						
	Global and dedicated Hot Spare Offered Storage Array shall support Global hot Spare for offered Disk drives. Storage subsystem shall also have the flexibility to assign dedicated spare for raid sets.						
	Logical Volume Storage Subsystem shall support minimum of 512 Logical Units.						
1.5	Backup Solution for Servers with the following details	1	334400	16720	0	351120	351120
	Autoloader with one LTO-4 tape drive with rack mount kit,						
	Number of Drives : 1						
	Number of Slots : 8						
	Capacity (native) : 6.4 TB						
	Capacity (compressed) : 12.8 TB						
	Performance (maximum, native) : 432 GB/h						
	Performance (maximum, compressed) : 864 GB/h						
	Interface : Ultra 320 SCSI LVD, SAS 3Gb/s						
	Cartridge Loading : 2 Magazines						
	Form Factor : 1U						
	Remote Management (Web GUI) : System Status, Drive Operations, Remote Diagnostics, Remote Management						
	Certification Marks CE, UL, C-UL, GS / TÜV, VCCI, C-Tick						
	10 Data Media, 1 Cleaning Media with the following features of backup Software, The Backup Server Software should support MS Windows for the Master/Media Server. There must be support for the latest version of Windows Server OS						

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	Backup Software should have an Microsoft Tape Format, which would ensure that the backup data can be read by basic Windows OS without even using any backup software						
	Should have active directory features like:						
	Online recovery of individual active directory objects						
	Should be able to restore AD objects without rebooting AD domain controller						
	Should support 2003/2008 active directory domain services						
	Backup Software should provide, an Online Backup for all the standard and commercially available databases and applications like MS-SQL, ORACLE, Exchange, Active Directory, Share Point Server, DB2 etc.						
	Backup Software should be capable doing a granular recovery for file systems, Exchange and Active Directory, so that even a single file/ single mail/ a single user attribute can be restored from the backups.						
	Backup Software should support the Continuous Data Protection technology for protecting file-systems, exchange servers etc.						
	The Backup Software should support Backup to Disk, so that there can be simultaneously read and write of Backup data from the Disk (a Recovery Operation from the Backup Disk, should be possible, for some clients, while the Backup is happening to the Disk for a few other Clients)						
	The Backup Software should have inbuilt support for 128 Bit AES Encryption.						
	The Backup Software should provide Open File backup for all Desktops.						
	The Backup Software should provide system recovery functionality for windows systems, so that in case of a failure machines can be quickly recovered to their running state.						
	Should allow backup jobs to be targeted to specific slots within a tape autoloader or library; mix drive types within a tape library.						
	The backup software should support full integration to virtual environment like VMWare and Microsoft HyperV for the backup and recovery of full virtual machines and the individual files and folders inside them						
	Should support single pass backup for faster backup/recovery						
	Necessary agents should be provided as per the server list and configuration.						
	Bare Metal Recovery :						
	Should support for Dissimilar Hardware						
	Should be able to quickly recover the system						
	Should support for windows 2000/2003/2008						
	Should support conversion to and from virtual environment						
	Should have support for VMWare, Microsoft HyperV & Microsoft Virtual Server						
	Should support for 32 bit & 64 bit windows						
	Should support scheduling of recovery points						
	Should be able to take incremental backups after full backup so that the only changes are backed up in incremental backup sets.						
	Should auto-detect hardware and install						

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	appropriate drivers							
	Should support saving of recovery points at FTP locations, DAS, NAS, USB Drive, DVD drives							
	Should have manager console to manage recovery points of all servers from central location							
1.6	Rack Size of the Rack : 42 U Front and fully perforated steel door Castor Wheel with Brakes & Lock The server rack should come with 2 Nos of Stationery Shelf The server rack comes with two Nos of Horizontal Cable Manager and Vertical Cable Manager The server rack should come with Roof Fan Tray with min 4 Fans Min 17" LCD Foldable 1U Monitor with Keyboard & Mouse		1	79730	3986	0	83716	83716
1.7	Server (Database)		1	208200	10410	0	218610	218610
	CPU	2 x Intel Xeon Quad Core Processor E5620 (2.4 GHz or higher with 12MB Cache or higher & 5.86 GT/s or higher) or Higher						
	Memory	18 GB Registered DDR3 with ECC, 1066 MHz or higher Memory upgradable to 192 GB through 12 DDR3 DIMMs						
	DIMM Slots	12 DDR3 UDIMM/RDIMM ECC 800/1066/1333 MHz						
	Chipset	Intel® 5520 + IO Controller HUB ICH10R						
	PCI Slots	Minimum of 6 PCI Slots including PCI & PCI-E slots						
	Disk Drives	3* 300 GB SAS (15k rpm) Hot Swappable Hard Disks with RAID 5 Enabled						
	Disk Controller	On board SAS controller/ports						
	Monitor	WITHOUT MONITOR						
	Ethernet	Dual port Intel gigabit ethernet controller with IOAT feature						
	Graphics	Server Engines* LLC Pilot II BMC with 8MB DDR2 memory.						
	Ports	2 Serial, 6 USB (4+2), 1 VGA						
	Keyboard	USB Keyboard. Same make as that of Server.						
	Mouse	USB Optical Mouse. Same make as that of Server.						
	Backup Device	DAT 320 SAS Internal Tape Drive with Backup Software, Data Cartridge & Cleaning Catridge						
	Optical Drive	DVD ROM Drive						
	Power Supply	1+1 Redundant Power Supply or better						
	Bays	8 Hot Swap Hard Disk Bays						
	Housing	Tower Type						
	Management Software	OEM Server Management Software, System Health Monitoring, Remote Management on Windows						
	Certifications	Windows Server 2003/2008						
	Security	Power on Password						

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1.8	Server for Talwara, Sundernagar & Nangal with the same Config as at 1.7 but with		3	177400	8870	0	186270	558810
	CPU	1 x Intel Xeon Quad Core Processor E5620 (2.4 GHz or higher with 12MB Cache or higher & 5.86 GT/s or higher) or Higher						
	Memory	12 GB Registered DDR3 with ECC, 1066 MHz or higher Memory upgradable to 192 GB through 12 DDR3 DIMMs						
	Monitor	19" LCD Monitor, TCO'05 Certified, Make same as that of Server						
2	SYSTEM SOFTWARE							
2.1	WINDOWS 2008 ENTERPRISE SERVER 64 Bit Edition OLP WITH MEDIA (Incl Client Access License for 10 users)		9	103130	5156.5	10622	118909	1070178
2.2	EXCHANGE SERVER 2010 ENTERPRISE OLP WITH MEDIA AND FOREFRONT THREAT MANAGEMENT GATEWAY 2010 with MEDIA Version		1	389328	19466	40101	448895	448895
2.3	EXCHANGE SERVER 2010 STANDARD OLP WITH MEDIA or Latest Version		2	28814.3	1440.7	2968	33222.8	66446
3	POWER CONDITIONING EQUIPMENT							
3.1	ON LINE UPS OF 5 KVA RATING		4	41000	2050	0	43050	172200
	Power Rating	5KVA						
	Technology	DOUBLE CONVERSION On-line UPS using IGBT & having Isolation Transformer for total isolation from mains.						
	INPUT							
	Nominal Voltage Range	230 V - 25 % + 10% , Single Phase						
	Nominal frequency Range	50 Hz ± 5%						
	Power Factor	Not less than 0.95						
	Wave Form	Sinusoidal						
	OUTPUT							
	Continuous output Power	5 KVA/ 3.5 KW or higher						
	Voltage	230 V, Single Phase						
	Voltage Regulation	Not more than 2%						
	Frequency	50 Hz ± 0.5 Hz						
	Overload Capacity	110% for 10 minutes and 150% for 10 seconds120% for 30 secs						
	Wave Form	Sinusoidal						
	Load Power Factor	0.7 to 0.8						
	COMPUTER & COMMUNICATION INTERFACE Should be available & the software should be capable of monitoring UPS activity & to ensure orderly shutdown of the server in case of battery low voltage/discharged condition. Software required for Windows Server 2008. SNMP Based real time monitoring of all vital parameters such as Input voltage, Output Voltage, Output Load, Battery Voltage om Windows.							
	MEASURING INSTRUMENTS (ANALOG OR DIGITAL)							

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1	2		3	4	5	6	7	8=7*3
	Input Voltage , Output Voltage & Frequency, Batt Voltage, Batt Current, Load							
	Current in Amps							
	Minimum 100 records of faults generated with date and time. FIFO method							
	PROTECTION							
	Over Load protection	MCBs both at Input & Output, Over Voltage protection						
	ADDITIONAL FEATURES							
	Static and Manual bye pass switch should be available							
	Caster wheels should be available for easy mobility of the UPS Unit of 5 KVA.							
	Cold start facility on full load should be available.							
	Noise level less than 45 db							
	INDICATIONS							
	Battery charging/status Indication							
	Bye-pass ON/OFF indication							
	Mains ON/OFF indication							
	Inverter ON/OFF							
	ALARM WITH INDICATIONS							
	Overload, Fault, Battery Voltage Low/Discharged							
3.2	BATTERIES for S no 3.1 with 60 minutes backup		4	37500	4687.5	0	42187.5	168750
	Type	Sealed Maintenance free.						
	Make	Panasonic/CSB/Yuasa/Exide						
	Back-up time	At least 60 minutes on full load						
	Operating Temperature Range	0-45 degree centigrade.						
	Rack	Rack for Batteries to be included (As per Purchaser/Space Requirement)						
4	NETWORKING COMPONENTS (ACTIVE)							
4.1	ROUTER with the following Specifications For Chandigarh		1	796800	39840	0	836640	836640
	Architecture:							
	Should have support for Data, Voice, Video, Security and mobility services							
	Should be chassis based & modular architecture with multicore processor for scalability and should be a single box configuration for ease of management.							
	Should have integrated redundant power supply.							
	Should have embedded hardware based (IPSec and SSL) Encryption card accelerator							
	Should support complete Firewall, IPS features.							
	Should have 1Gb RAM should be upgradeable to 2Gb							
	Should have 256Mb flash and should be upgradeable to 4Gb							
	Should have four free slots for future expansion.							
	Should have integrated USB port to provide console, storage and secure token capabilities							
	Chassis should be 19" rack mountable type.							

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			All figures in Rs.				
1	2	3	4	5	6	7	8=7*3
	Should be supplied with necessary power cards, data cables, connectors, CD's, manuals, bracket accessories, wire managers and other appropriate accessories.						
	Performance:						
	Shall support high performance traffic forwarding upto 150Mbps with con-current services						
	Shall support variety of interfaces like V.35 Sync Serial (64Kbps, 2 Mbps), G.703, Ch-E1, 3G, E3 Interfaces for future uplink purposes, Ethernet Interfaces – 1Gbps, 10/100 Mbps, 802.3af, ISDN PRI, BRI, ATM, Digital/Analog dialup and remote access modules,						
	Shall support voice interface like FXS, FXO, E&M, T1/E1						
	Shall support DSL connectivity using ADSL, G.SHDSL						
	Should support integrated capability to host multiple application min. four like Unified Communication, Video Surveillance, Storage System, Network services, or customer application, etc using different processor, storage, memory to optimize and consolid						
	Should support other IP Services like GRE tunneling, ACLs, IPSEC VPNs, Firewalling, NAT services.						
	Shall support Voice traffic optimization with features like WRED, H-QoS, RSVP, performance routing and network based application routing						
	Should support four onboard voice and video capable digital signal processor						
	Should support per port PoE power monitoring						
	Should support management of power to module slots, to reduce energy consumption						
	High Availability						
	Shall support redundant Gigabit Ethernet connection to LAN						
	Shall have Redundant Power supply						
	Shall support fast reboot for minimum network downtime						
	Shall support Non-Stop forwarding for fast re-convergence of routing protocols						
	Shall support boot options like booting from TFTP server, Network node and Flash Memory						
	Shall support multiple storage of multiple images and configurations						
	Shall support link aggregation using LACP as per IEEE 802.3ad						
	Shall support VRRP or equivalent						
	Protocol Support						
	Should support Routing protocols like IS-IS, RIP v1 & RIP v2, OSPF ver2, OSPF on demand, BGP4, BGP Route-Reflector						
	Should support Multicast routing protocols IGMPv3, PIM-SM, PIM-SS, DVMRP, IPv4 to IPv6 Multicast, BFD, IEEE802.1ah, IEEE802.3ag						
	Should support DHCPv6, IPv6 QoS, RIPng, OSPFv3						
	Shall support MPLS, Layer2 and Layer3 VPN, L2TPv3						
	Support for Load balancing Protocol.						

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1	2	3	4	5	6	7	8=7*3
	Support unequal cost link load sharing to better utilize the alternate paths						
	Configuration Roll Back to recover the mis-configured router to last good configuration						
	Encapsulation Support Should support Encapsulation like Ethernet, 802.1q, PPP, MLPPP, FR, MLFR, HDLC, Serial (RS232, RS449, X.21, V.35, EIA530), PPPoE and ATM						
	Security Features:						
	Support Standard ACL, Extended ACL, ACL that can match arbitrary bits of packet bits of a packet at an arbitrary depth in the packet header and payload						
	Support IPSEC Site-to-Site and Remote Access VPNs. Any Office to Any other office, dynamic establishment of VPNs so that the configuration & management of IPSEC VPNs becomes easier, Tunnel-less VPN connectivity and SSL VPN						
	Support IPSEC VPNs should be able to carry data, voice, video						
	Support Firewall feature set supporting Stateful, application-based filtering, per-user Authentication and Authorization, transparent firewall, Http and email inspection engine to detect port 80 misuses and email connectivity. IPS feature set with predefi						
	Support Content filtering						
	MD-5 route authentication for RIP, OSPF and BGP						
	Shall support multi-level of access						
	SNMPv3 authentication, SSHv2						
	AAA support using Radius.						
	CHAP authentication for P-to-P links						
	DoS prevention through TCP Intercept & DDoS protection						
	IP Access list to limit Telnet and SNMP access to router						
	Multiple privilege level authentications for console and telnet access through Local database or through an external AAA Server.						
	Time based & Dynamic ACLs for controlled forwarding based on time of day for offices						
	IEEE 802.1x support for MAC address authentication						
	Multi-media support:						
	Shall support Voice capabilities						
	i) Codec support for G.711 and G.729						
	ii) Should support the capability to integrate with PBXs using E1 connectivity.						
	Shall support H.323, SIP, MGCP						
	Shall support QSIG, E1 R2 and several CAS signaling						
	Should have in-built voice call processing in the event of WAN link failure to central call processing Engine capability for xx IP phones						
	Shall support bandwidth optimization features like Voice Activity Detection, Silence Suppression, Echo cancellation						
	Should not consume more than 14-15Kbps of bandwidth (including overheads) for a single voice over IP call						

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1	2	3	4	5	6	7	8=7*3
	Debug, alarms & Diagnostics:						
	Support for monitoring of Traffic flows for Network planning and Security purposes						
	Trace-route, Ping and extended Ping						
	Should support extensive support for SLA monitoring for metrics like delay, latency, jitter, packet loss, RTP-Based VoIP traffic and should support the capability for measurement of the call setup time using H.323/SIP signaling protocol over IP network.						
	Shall support embedded event manager that enables automation of many network management tasks and directs the operation of router OS to increase availability, collect information, and notify external systems or personnel about critical events						
	Accounting:						
	Packet & Byte Counts						
	Start Time Stamp & End Time Stamps.						
	Network Time Protocol						
	Input & Output interface ports.						
	Type of service, TCP Flags & Protocol						
	Source & Destination IP addresses						
	Source & Destination TCP/UDP ports						
	Management						
	Shall have support for Web, GUI based management, CLI, Telnet and SNMPv3						
	Shall support Secure Shell for secure connectivity.						
	Embedded RMON support for four groups – history, statistics, alarms and events						
	Should have to support Out of band management through Console and an external modem for remote management.						
	Event and System logging: Event and system history logging functions shall be available. The Router shall generate system alarms on events. Facility to put selective logging of events onto a separate hardware here the analysis of log shall be available.						
	Pre-planned scheduled Reboot Facility: The Router shall support the preplanned timed reboot to upgrade their hardware to a new software feature and plan the rebooting as an off-peak time						
	Interface Requirements:						
	4 * Channelized E1 WAN interface Ports.						
	4 * E1 WAN interface Ports, On board 2 x GB Ethernet Port						
	4 * IP Phones with SCCP support to register with this router.						
	Miscellaneous WITH POWER CABLE, LAN CABLE(S), AUXILIARY AND CONSOLE CABLES, V.35 CABLE						
4.2	Router For Sundernagar & Nangal Computer Centres	2	220400	11020	0	231420	462840
	Architecture:						
	Should have support for Data, Voice, Video, Security and mobility services.						
	Should be chassis based & modular architecture with multicore processor for scalability and should be a single box configuration for ease of management.						

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			All figures in Rs.				
1	2	3	4	5	6	7	8=7*3
	Should support redundant power supply.						
	Should have embedded hardware based (IPSec and SSL) Encryption card accelerator						
	Should support complete Firewall, IPS features.						
	Should have 512Mb RAM should be upgradeable to 2Gb						
	Should have 256Mb flash and should be upgradeable to 4Gb						
	Should have two free slots for future expansion.						
	Should have integrated USB port to provide console, storage and secure token capabilities						
	Chassis should be 19" rack mountable type.						
	Should be supplied with necessary power cards, data cables, connectors, CD's, manuals, bracket accessories, wire managers and other appropriate accessories.						
	Performance:						
	Shall support high performance traffic forwarding upto 35Mbps with con-current services						
	Shall support variety of interfaces like V.35 Sync Serial (64Kbps, 2 Mbps), G.703, Ch-E1, 3G, E3 Interfaces for future uplink purposes, Ethernet Interfaces – 1Gbps, 10/100 Mbps, 802.3af, ISDN PRI, BRI, ATM, Digital/Analog dialup and remote access modules,						
	Shall support voice interface like FXS, FXO, E&M, T1/E1						
	Shall support DSL connectivity using ADSL, G.SHDSL						
	Should support integrated capability to host application like Unified Communication, Video Surveillance, Storage System, Network services, or customer application, etc using different processor, storage, memory to optimize and consolidate infrastructure						
	Should support other IP Services like GRE tunneling, ACLs, IPSEC VPNs, Firewalling, NAT services.						
	Shall support Voice traffic optimization with features like WRED, H-QoS, RSVP, performance routing and network based application routing						
	Should support two onboard voice and video capable digital signal processor						
	Should support per port PoE power monitoring						
	Should support management of power to module slots, to reduce energy consumption						
	High Availability						
	Shall support redundant Gigabit Ethernet connection to LAN						
	Shall support Redundant Power supply						
	Shall support fast reboot for minimum network downtime						
	Shall support Non-Stop forwarding for fast re-convergence of routing protocols						
	Shall support boot options like booting from TFTP server, Network node and Flash Memory						
	Shall support multiple storage of multiple images and configurations						
	Shall support link aggregation using LACP as per IEEE 802.3ad						

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			All figures in Rs.				
1	2	3	4	5	6	7	8=7*3
	Shall support VRRP or equivalent						
	Protocol Support						
	Should support Routing protocols like IS-IS, RIP v1 & RIP v2, OSPF ver2, OSPF on demand, BGP4, BGP Route-Reflector						
	Should support Multicast routing protocols IGMPv3, PIM-SM, PIM-SS, DVMRP, IPv4 to IPv6 Multicast, BFD, IEEE802.1ah, IEEE802.3ag						
	Should support DHCPv6, IPv6 QoS, RIPng, OSPFv3						
	Shall support MPLS, Layer2 and Layer3 VPN, L2TPv3						
	Support for Load balancing Protocol.						
	Support unequal cost link load sharing to better utilize the alternate paths						
	Configuration Roll Back to recover the mis-configured router to last good configuration						
	Encapsulation Support						
	Should support Encapsulation like Ethernet, 802.1q, PPP, MLPPP, FR, MLFR, HDLC, Serial (RS232, RS449, X.21, V.35, EIA530), PPPoE and ATM						
	Security Features:						
	Support Standard ACL, Extended ACL, ACL that can match arbitrary bits of packet bits of a packet at an arbitrary depth in the packet header and payload						
	Support IPSEC Site-to-Site and Remote Access VPNs. Any Office to Any other office, dynamic establishment of VPNs so that the configuration & management of IPSEC VPNs becomes easier, Tunnel-less VPN connectivity and SSL VPN						
	Support IPSEC VPNs should be able to carry data, voice, video						
	Support Firewall feature set supporting Stateful, application-based filtering, per-user Authentication and Authorization, transparent firewall, Http and email inspection engine to detect port 80 misuses and email connectivity. IPS feature set with predefi						
	Support Content filtering						
	MD-5 route authentication for RIP, OSPF and BGP						
	Shall support multi-level of access, SNMPv3 authentication, SSHv2						
	AAA support using Radius. CHAP authentication for P-to-P links						
	DoS prevention through TCP Intercept & DDoS protection						
	IP Access list to limit Telnet and SNMP access to router						
	Multiple privilege level authentications for console and telnet access through Local database or through an external AAA Server.						
	Time based & Dynamic ACLs for controlled forwarding based on time of day for offices						
	IEEE 802.1x support for MAC address authentication						
	Multi-media support:						
	Shall support Voice capabilities						
	Should support the capability to integrate with PBXs using E1 connectivity.						
	Shall support H.323, SIP, MGCP						

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			All figures in Rs.				
1	2	3	4	5	6	7	8=7*3
	Shall support H.323, SIP, MGCP, Shall support QSIG, E1 R2 and several CAS signaling						
	Should have in-built voice call processing in the event of WAN link failure to central call processing Engine capability for xx IP Phones						
	Shall support bandwidth optimization features like Voice Activity Detection, Silence Suppression, Echo cancellation						
	Should not consume more than 14-15Kbps of bandwidth (including overheads) for a single voice over IP call						
	Debug, alarms & Diagnostics:						
	Support for monitoring of Traffic flows for Network planning and Security purposes						
	Trace-route, Ping and extended Ping						
	Should support extensive support for SLA monitoring for metrics like delay, latency, jitter, packet loss, RTP-Based VoIP traffic and should support the capability for measurement of the call setup time using H.323/SIP signaling protocol over IP network.						
	Shall support embedded event manager that enables automation of many network management tasks and directs the operation of router OS to increase availability, collect information, and notify external systems or personnel about critical events						
	Accounting:						
	Packet & Byte Counts						
	Start Time Stamp & End Time Stamps.						
	Network Time Protocol						
	Input & Output interface ports.						
	Type of service, TCP Flags & Protocol						
	Source & Destination IP addresses						
	Source & Destination TCP/UDP ports						
	Management						
	Shall have support for Web, GUI based management, CLI, Telnet and SNMPv3						
	Shall support Secure Shell for secure connectivity.						
	Embedded RMON support for four groups – history, statistics, alarms and events						
	Should have to support Out of band management through Console and an external modem for remote management.						
	Event and System logging: Event and system history logging functions shall be available. The Router shall generate system alarms on events. Facility to put selective logging of events onto a separate hardware here the analysis of log shall be available.						
	Pre-planned scheduled Reboot Facility: The Router shall support the preplanned timed reboot to upgrade their hardware to a new software feature and plan the rebooting as an off-peak time						
	Interface Requirements:						
	4 * E1 WAN interface Ports. 2 x GB Ethernet Port						
	2 * ISDN BRI ports with NT						
	2 * VoIP users with software and IP Phone.						
	Miscellaneous WITH POWER CABLE, LAN CABLE(S), AUXILIARY AND CONSOLE CABLES, V.35 CABLE						

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			All figures in Rs.				
1	2	3	4	5	6	7	8=7*3
4.3	Router (For Ganguwal & Slapper)	2	172100	8605	0	180705	361410
	Architecture:						
	Should have support for Data, Voice, Video, Security and mobility services.						
	Should be chassis based & modular architecture with multicore processor for scalability and should be a single box configuration for ease of management.						
	Should have embedded hardware based (IPSec and SSL) Encryption card accelerator						
	Should support complete Firewall, IPS features.						
	Should have 512Mb RAM should be upgradeable to 2Gb						
	Should have 256Mb flash and should be upgradeable to 4Gb						
	Should have one free slot for future expansion.						
	Should have integrated USB port to provide console, storage and secure token capabilities						
	Chassis should be 19" rack mountable type.						
	Should be supplied with necessary power cards, data cables, connectors, CD's, manuals, bracket accessories, wire managers and other appropriate accessories.						
	Performance:						
	Shall support high performance traffic forwarding upto 25Mbps with con-current services						
	Shall support variety of interfaces like V.35 Sync Serial (64Kbps, 2 Mbps), G.703, Ch-E1, 3G, E3 Interfaces for future uplink purposes, Ethernet Interfaces – 1Gbps, 10/100 Mbps, 802.3af, ISDN PRI, BRI, ATM, Digital/Analog dialup and remote access modules,						
	Shall support voice interface like FXS, FXO, E&M, T1/E1						
	Shall support DSL connectivity using ADSL, G.SHDSL						
	Should support other IP Services like GRE tunneling, ACLs, IPSEC VPNs, Firewalling, NAT services.						
	Shall support Voice traffic optimization with features like WRED, H-QoS, RSVP, performance routing and network based application routing						
	Should support two onboard voice and video capable digital signal processor						
	Should support per port PoE power monitoring						
	Should support management of power to module slots, to reduce energy consumption						
	High Availability						
	Shall support redundant Gigabit Ethernet connection to LAN						
	Shall support Redundant Power supply						
	Shall support fast reboot for minimum network downtime						
	Shall support Non-Stop forwarding for fast re-convergence of routing protocols						
	Shall support boot options like booting from TFTP server, Network node and Flash Memory						
	Shall support multiple storage of multiple images and configurations						

S. No.	DESCRIPTION	Quantity	UNIT PRICE inclusive of Excise, Custom Duty, Freight & Forwarding, Insurance, Installation & Commissioning Charges	CST / ST (In Figure)	Service Tax (In Figure)	Total Unit Price F.O.R Destination incl. of CST/ST, Service Tax, Freight & Forwarding, Custom Duty, Insurance, Installation & Commissioning Charges etc.	Total Amount F.O.R Destination incl. of CST/ST, Service Tax, Freight & Forwarding, Custom Duty, Insurance, Installation & Commissioning Charges etc.
			All figures in Rs.				
1	2	3	4	5	6	7	8=7*3
	Shall support link aggregation using LACP as per IEEE 802.3ad						
	Shall support VRRP or equivalent						
	Protocol Support						
	Should support Routing protocols like IS-IS, RIP v1 & RIP v2, OSPF ver2, OSPF on demand, BGP4, BGP Route-Reflector						
	Should support Multicast routing protocols IGMPv3, PIM-SM, PIM-SS, DVMRP, IPv4 to IPv6 Multicast, BFD, IEEE802.1ah, IEEE802.3ag						
	Should support DHCPv6, IPv6 QoS, RIPng, OSPFv3						
	Shall support MPLS, Layer2 and Layer3 VPN, L2TPv3						
	Support for Load balancing Protocol.						
	Support unequal cost link load sharing to better utilize the alternate paths						
	Configuration Roll Back to recover the mis-configured router to last good configuration						
	Encapsulation Support						
	Should support Encapsulation like Ethernet, 802.1q, PPP, MLPPP, FR, MLFR, HDLC, Serial (RS232, RS449, X.21, V.35, EIA530), PPPoE and ATM						
	Security Features:						
	Support Standard ACL, Extended ACL, ACL that can match arbitrary bits of packet bits of a packet at an arbitrary depth in the packet header and payload						
	Support IPSEC Site-to-Site and Remote Access VPNs. Any Office to Any other office, dynamic establishment of VPNs so that the configuration & management of IPSEC VPNs becomes easier, Tunnel-less VPN connectivity and SSL VPN						
	Support IPSEC VPNs should be able to carry data, voice, video						
	Support Firewall feature set supporting Stateful, application-based filtering, per-user Authentication and Authorization, transparent firewall, Http and email inspection engine to detect port 80 misuses and email connectivity. IPS feature set with predefi						
	Support Content filtering						
	MD-5 route authentication for RIP, OSPF and BGP						
	Shall support multi-level of access						
	SNMPv3 authentication, SSHv2						
	AAA support using Radius.						
	CHAP authentication for P-to-P links						
	DoS prevention through TCP Intercept & DDoS protection						
	IP Access list to limit Telnet and SNMP access to router						
	Multiple privilege level authentications for console and telnet access through Local database or through an external AAA Server.						
	Time based & Dynamic ACLs for controlled forwarding based on time of day for offices						
	IEEE 802.1x support for MAC address authentication						
	Multi-media support:						
	Shall support Voice capabilities						

S. No.	DESCRIPTION	Quantity	UNIT PRICE inclusive of Excise, Custom Duty, Freight & Forwarding, Insurance, Installation & Commissioning Charges	CST / ST (In Figure)	Service Tax (In Figure)	Total Unit Price F.O.R Destination incl. of CST/ST, Service Tax, Freight & Forwarding, Custom Duty, Insurance, Installation & Commissioning Charges etc.	Total Amount F.O.R Destination incl. of CST/ST, Service Tax, Freight & Forwarding, Custom Duty, Insurance, Installation & Commissioning Charges etc.
			All figures in Rs.				
1	2	3	4	5	6	7	8=7*3
	Codec support for G.711 and G.729						
	Should support the capability to integrate with PBXs using E1 connectivity.						
	Shall support H.323, SIP, MGCP						
	Shall support QSIG, E1 R2 and several CAS signaling						
	Should have in-built voice call processing in the event of WAN link failure to central call processing Engine capabilities for xx IP Phones						
	Shall support bandwidth optimization features like Voice Activity Detection, Silence Suppression, Echo cancellation						
	Should not consume more than 14-15Kbps of bandwidth (including overheads) for a single voice over IP call						
	Debug, alarms & Diagnostics:						
	Support for monitoring of Traffic flows for Network planning and Security purposes						
	Trace-route, Ping and extended Ping						
	Should support extensive support for SLA monitoring for metrics like delay, latency, jitter, packet loss, RTP-Based VoIP traffic and should support the capability for measurement of the call setup time using H.323/SIP signaling protocol over IP network.						
	Shall support embedded event manager that enables automation of many network management tasks and directs the operation of router OS to increase availability, collect information, and notify external systems or personnel about critical events						
	Accounting: Packet & Byte Counts						
	Start Time Stamp & End Time Stamps.						
	Network Time Protocol						
	Input & Output interface ports. Type of service, TCP Flags & Protocol						
	Source & Destination IP addresses						
	Source & Destination TCP/UDP ports						
	Management						
	Shall have support for Web, GUI based management, CLI, Telnet and SNMPv3						
	Shall support Secure Shell for secure connectivity.						
	Embedded RMON support for four groups – history, statistics, alarms and events						
	Should have to support Out of band management through Console and an external modem for remote management.						
	Event and System logging: Event and system history logging functions shall be available. The Router shall generate system alarms on events. Facility to put selective logging of events onto a separate hardware here the analysis of log shall be available.						
	Pre-planned scheduled Reboot Facility: The Router shall support the preplanned timed reboot to upgrade their hardware to a new software feature and plan the rebooting as an off-peak time						
	Interface Requirements:						
	2 * E1 WAN interface Ports. 2 x GB Ethernet Port						
	2 * VoIP users with software and IP Phone.						
	Miscellaneous WITH POWER CABLE, LAN CABLE(S), AUXILIARY AND CONSOLE CABLES, V.35						

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1	2		3	4	5	6	7	8=7*3
	CABLE							
4.4	LEASED LINE MODEMS (G.703 and V.35 pair)		8	24200	1210	0	25410	203280
	FEATURE	G.SHDSL Modem						
	Line Interface	2 Wire						
	Line Coding	TC - PAM						
	Line Rate	rate adaptive/fixed						
	Impedence	135 ohms						
	Standards	ITU-T 991.2, ETSI 101 524						
	RANGE	2 WIRE 4.5 KM @ 2048Kb/s on 26 AWG						
	Protection	As Per ITU K.21, UL 1950						
	Line Connectors	RJ-45 and 5-clip terminal block						
	DTE INTERFACE Type	Built in Ethernet interface for mangement/Lan extension						
		X.21, 15-pin, D-type, female						
		V.35, 34-pin, female / G.703/G.704 E1, RJ-45 or BNC						
		IR-ETH/Q (Ethernet bridge with 4 port Switch)						
		VLAN support), RJ-45						
		IR-IP (IP router), RJ-45						
	Data Rate	Depends on the DTE/line						
		interface type and clock mode:						
		2-wire: 64–2304 kbps						
	E1 Coding	HDB3						
	E1 Line Impedance	120Ω, balanced - 75Ω, unbalanced						
	Control Port Interface	V.24/RS-232, DTE/DCE						
	Format	7 or 8 bits; odd, even or no parity						
	Baud Rate	9.6, 19.2, 38.4, 57.6, 115.2 kbps						
	Connector	9-pin, D-type, female						
	Management	SNMP ,Web ,Telnet ,Dial in & Dial outInband via dedicated time Slots						
	Remote Config	Yes, Fully configurable						
	GENERAL Timing	Internal, from internal oscillator						
		External, from attached DTE						
		Receive, from received signal						
	Diagnostics	Loopbacks:						
		Local analog loopback in compliance with ITU V.54						
		Remote digital loopback in compliance with ITU V.54						
		Remote Loop Back at SHDSL repeater						
		System monitoring & diagnostics of both the units from one place through management.						
		Local Port monitoring & diagnostics of both the units from one place						

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				All figures in Rs.				
1	2		3	4	5	6	7	8=7*3
	Statistics Collection	E1 with CRC-4 or T1 with ESF framing: per ITU G.706 E1 without CRC-4 or T1 with SF framing: bipolar violations (BPV) SHDSL performance						
	Alarm Relay	Alarms (real time) are relayed via a dedicated connector						
	Power	Same Power Supply for both AC & DC Power.						
		AC: 100 to 240 VAC (±10%), 50 to 60 Hz, 17 VA max						
		DC: -48 VDC (-36 to -72 VDC), 7W (4-wire), 5W (2-wire)						
	Performance monitoring	G.SHDSL statistics collection						
		E1 with CRC-4: per ITU G.706						
		E1 without CRC-4: BPV						
	Environment	Temperature: 0-50°C/32–122°F						
	Indicator	Power , Transmit Data, Sync Status, Loss od E1 Sync, Test etc						
4.5	LAN Extender		22	26620	1331	0	27951	614922
	2-wire managed modem with full-duplex data rates of up to 5.7 Mbps over 2-wire							
	SHDSL bonding – for EFM: PAF according to IEEE802.3, for HDLC: M-Pair according to G.991.2							
	EFM Bonding Per IEEE802.3ah and ITU-T G.991.2 (for Ethernet only) Line code: 16 or 32 TC-PAM							
	4-port 10/100BaseT interface with integrated switch							
	simple installation & SNMP based management							
	Line Rate For EFM: 192 to 5696 kbps in steps of n x 64 kbps for each 2-wires For HDLC: 192 to 22784 kbps in steps of nx 64 where n = 89 for 2W and 178 for 4W							
	Frame Size : For EFM: 1580 bytes , For HDLC: 1530 bytes (while working with E1 or opposite repeaters)							
	Dual Bearer mode for E1 and Ethernet HDLC over 2-wire lines							
4.6	EDGE / DEPARTMENT/ BUILDING SWITCH		19	70800	3540	0	74340	1412460
	Physical Specification: Should be rack mountable with 20-port 10/100/1000Mbps and 4 1000BaseT or SFP slots							
	General Specification: Switch with 32 Gbps Switching Fabric							
	35.7 million packets per second forwarding rate on 64-byte packets							
	8000 MAC address supported							
	255 IGMP groups							
	Should support Redundant Power Supply							
	Layer-2 Features							
	IEEE 802.1Q VLAN encapsulation. Up to 255 VLANs per switch and upto 4000 VLAN IDs							
	Support for Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors							

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			All figures in Rs.				
1	2	3	4	5	6	7	8=7*3
	Centralized VLAN Management. VLANs created on the Core Switches should be propagated to all the other switches automatically, thus reducing the overhead of creating / modifying / deleting VLANs in all the switches in turn eliminating the configuration err						
	Spanning-tree PortFast for fast convergence						
	802.1d, 802.1p, 802.1Q, 802.1s, 802.1w, 802.1x, 802.1ab, 802.3ad,						
	Spanning-tree root guard to prevent other edge switches becoming the root bridge.						
	IGMP snooping v1, v2 and v3						
	Link Aggregation Protocol (LACP)						
	Support for Detection of Unidirectional Links and to disable them to avoid problems such as spanning-tree loops						
	Should be able to discover the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.						
	Support for Switch port auto recovery (err disable) to automatically re-enable a link that is disabled because of a network error.						
	Should support Multicast VLAN registration						
	Should support DHCP Server enabling a convenient deployment option for the assignment of IP addresses in networks that do not have without a dedicated DHCP server						
	Should support Local Proxy Address Resolution Protocol (ARP) works in conjunction with Private VLAN Edge to minimize broadcasts and maximize available bandwidth						
	Should support LLDP and LLDP-MED including client location information. Should exchange link and device information in multivendor networks.						
	Should support configuration rollback to replace current configuration with any saved configuration file. Should support link state tracking which provides layer2 redundancy in the network when used in conjunction with server teaming.						
	Support Configurable maximum transmission unit (MTU) of up to 9000 bytes, with a maximum Ethernet frame size of 9018 bytes (Jumbo frames) for bridging on Gigabit Ethernet ports						
	Support Autosensing speed on 10/100 ports, Autonegotiating half/full-duplex on all ports and Auto-MDIX						
	QoS Features						
	Per-port broadcast, multicast, and unicast storm control						
	Standard 802.1p CoS and DSCP classification using marking and reclassification on a per-packet basis by source and destination IP address, source and destination MAC address, or Layer 4 TCP or UDP port number.						
	Control- and Data-plane QoS ACLs						
	No performance penalty for highly granular QoS functions						
	Four egress queues per port to enable differentiated management of up to four traffic types						
	Weighted tail drop (WTD) to provide congestion						

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			All figures in Rs.				
1	2	3	4	5	6	7	8=7*3
	avoidance						
	Strict priority queuing mechanisms						
	Granular Rate Limiting function to guarantee bandwidth in increments as low as 1 Mbps						
	Rate limiting support based on source and destination IP address, source and destination MAC address, Layer 4 TCP and UDP information, or any combination of these fields, using QoS ACLs (IP ACLs or MAC ACLs), class maps, and policy maps.						
	Support for Asynchronous data flows upstream and downstream from the end station or on the uplink using ingress policing and egress shaping.						
	Up to 64 aggregate or individual policers for per Fast Ethernet or Gigabit Ethernet port.						
	Support for Automatic Quality of Service for easy configuration of QoS features for critical applications						
	Network security features						
	IEEE 802.1x to allow dynamic, port-based security, providing user authentication						
	Support for Admission Control features to improve the network's ability to automatically identify, prevent, and respond to security threats and also to enable the switches to collaborate with third-party solutions for security-policy compliance and enforcement						
	Port-based ACLs (PACLs) for Layer 2 interfaces to allow application of security policies on individual switch ports.						
	Unicast MAC filtering to prevent the forwarding of any type of packet with a matching MAC address						
	Unknown unicast and multicast port blocking to allow tight control by filtering packets that the switch has not already learned how to forward						
	IGMP filtering provides multicast authentication by filtering out no subscribers and limits the number of concurrent multicast streams available per port. Support for SSHv2, SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions						
	The switch should support 2 session of Port Mirroring based on port basis / vlan basis to support intrusion prevention system deployment in different VLANs. Should support bidirectional data on mirror port which allows IDS to take action when an intruder						
	Should be able to allow administrators to remotely monitor ports in a Layer 2 switch network from any other switch in the same network						
	RADIUS authentication to enable centralized control of the switch and restrict unauthorized users from altering the configuration.						
	MAC address notification to allow administrators to be notified of users added to or removed from the network						
	DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addresses. This can be used to prevent attacks that attempt to poison the DHCP binding database, and to rate limit the amount of DHCP traffic that enters a switch port.						

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			All figures in Rs.				
1	2	3	4	5	6	7	8=7*3
	DHCP Interface Tracker (Option 82) to augment a host IP address request with the switch port ID						
	Port security to secure the access to an access or trunk port based on MAC address. After a specific timeframe, the aging feature should remove the MAC address from the switch to allow another device to connect to the same port.						
	Multilevel security on console access to prevent unauthorized users from altering the switch configuration						
	BPDU Guard feature, to shut down Spanning Tree Protocol PortFast-enabled interfaces when BPDUs are received to avoid accidental topology loops.						
	Spanning-Tree Root Guard (STRG) to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.						
	Support for upto 512 access control entries (ACEs).						
	Management						
	CLI support to provide a common user interface and command set with all routers and switches of the same vendor						
	Remote Monitoring (RMON) software agent to support four RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis.						
	Support for RMON groups through the use of a mirrored port, which permits traffic monitoring of a single port, a group of ports, or the entire switch from a single network analyzer or RMON probe						
	Time-domain reflectometer (TDR) to diagnose and resolve cabling problems on copper ports						
	Layer 2 traceroute to ease troubleshooting by identifying the physical path that a packet takes from source to destination						
	Domain Name System (DNS) to provide IP address resolution with user-defined device names						
	Trivial File Transfer Protocol (TFTP) to reduce the cost of administering software upgrades by downloading from a centralized location						
	Network Timing Protocol (NTP) to provide an accurate and consistent timestamp to all intranet switches						
	Support RMON I and II standards						
	Support SNMPv1, SNMPv2c, and SNMPv3 and Telnet interface support delivers comprehensive in-band management, and a CLI-based management console provides detailed out-of-band management						
	Support IPV6 management						
	Regulatory Compliance						
	Switch shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards						
	Switch shall conform to EN 55022 ClassA/B or CISPR22 ClassA/B or CE Class A/B or FCC ClassA/B Standards						

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			All figures in Rs.				
1	2	3	4	5	6	7	8=7*3
	Following Modules for the Switches with the above configuration are required						
	1000BASE-SX Module Multi Mode - 4 nos.	4	11800	590	0	12390	49560
	1000BASE-LX Module Single Mode - 2 nos.	2	23500	1175	0	24675	49350
4,.7	Lumpsum Maintenance Charges for existing CISCO ROUTER 2801 with 2 WAN Ports, 2 FXS ports etc. for 4 years	1	20000		2060	22060	22060
5	ONE TIME CONFIGURATION/SETTINGS AS PER SCOPE MENTIONED in para-2 'Scope' of the PO.	1	535692		55176	590868	590868
6	LIASION CHARGES FOR LEASED LINES TO BE ARRANGED BY firm (From Nangal to Ganguwal,Sundernagar, Talwara & Sundernagar to Slapper, Ganguwal to Kotla)	5	1000		103	1103	5515
7	MAINTAINENCE CHARGES FOR LEASED LINES	5	5000		515	5515	27575
8	FACILITIES MANAGEMENT SEVICES As per Annexure-XI	20 Qtr	180000		18540	198540	3970800
S. Total							15171405
Less Total Value for buy-back Equipment (lumpsum) as per details at Annexure-IX		LS	35000		3605	38605	38605
Total							15132800

Rs. One hundred fifty one lac thirty two thousand and eight hundred only.

All the equipment except the software, UPS batteries & consumables carry warranty for five years. The batteries carry warranty for one year.

9.	The Unit rates for passive networking components and labour charges are as under, however the payment of these shall be made as per actual.				
S. no.	Description of Networking Component (Passive)	UNIT PRICE inclusive of Excise, Custom Duty, Insurance, Installation & Commissioning Charges	CST/ST (In Figure)	Service Tax (In Figure)	Total Unit Price F.O.R Destination incl. of CST/ST, Service Tax, Freight & Forwarding, Custom Duty, Insurance, Installation & Commissioning Charges etc.
		All Figuers in Rs.			
a)	UTP CABLE E-CAT 6 E, 500 Mhz(BOX 1000 FT)	5300	265.00	0	5565.00
b)	JACK PANEL FOR 24 CONNECTS E-CAT6E	4180	209.00	0	4389.00
c)	METAL RACKS 9U WALL MOUNT	2870	143.50	0	3013.50
d)	METAL RACKS 42 U FLOOR	79730	3986.50	0	83716.50
e)	DUAL ENDED MOUNTING CORDS 7 ' E-CAT6E	150	7.50	0	157.50
f)	DUAL ENDED MOUNTING CORDS 3 ' E-CAT6E	120	6.00	0	126.00
g)	SURFACE MOUNT I/O BOX E-CAT6E	150	7.50	0	157.50
h)	6 CORE OPTICAL FIBRE MULTIMODE CABLE (ARMOURED-OUTDOOR) OM3 50/125 MICROMETER PER METER	100	5.00	0	105.00
i)	6 CORE OPTICAL FIBRE SINGLEMODE CABLE (ARMOURED-OUTDOOR) 9/125 MICROMETER PER METER	25	1.25	0	26.25
j)	LIGHT INTERFACE UNIT (LIU) 24 PORT	2970	148.50	0	3118.50
k)	LIGHT INTERFACE UNIT (LIU) 12 PORT	1980	99.00	0	2079.00
l)	SC COUPLER FOR COUPLING	130	6.50	0	136.50
m)	SC CONNECTION PANEL	500	25.00	0	525.00
n)	SC MM CONNECTORS	220	11.00	0	231.00

9.	The Unit rates for passive networking components and labour charges are as under, however the payment of these shall be made as per actual.				
S. no.	Description of Networking Component (Passive)	UNIT PRICE inclusive of Excise, Custom Duty, Insurance, Installation & Commissioning Charges	CST/ST (In Figure)	Service Tax (In Figure)	Total Unit Price F.O.R Destination incl. of CST/ST, Service Tax, Freight & Forwarding, Custom Duty, Insurance, Installation & Commissioning Charges etc.
o)	CLAMPS	10	0.50	0	10.50
p)	BLANK PANEL	500	25.00	0	525.00
q)	LC-SC Patch Cords duplex 3M/10Ft Multimode	1040	52.00	0	1092.00
r)	SC CONNECTOR SM	220	11.00	0	231.00
s)	SC COUPLER FOR COUPLING SM	180	9.00	0	189.00
t)	LC-SC PATCH CORD 3M/10FT SM	1040	52.00	0	1092.00
u)	BUFFER TUBBING KIT	2000	100.00	0	2100.00
v)	AVAYA/EQ. CERTIFICATION PER NODE (UTP)	200	0	20.60	220.60
w)	FIBRE CERTIFICATION PER CORE	400	0	41.20	441.20
	JOB DESCRIPTION/LABOUR WORK				
a)	LIU FIXING	100	0	10.30	110.30
b)	CONNECTRIZATION OF FIBRE	300	0	30.90	330.90
c)	JACK PANEL FIXING	150	0	15.45	165.45
d)	RACK PANEL FIXING wall mount	150	0	15.45	165.45
e)	FIBRE OPTICS CABLE LAYING(UNDERGROUND) / CRIMPING/ CONDUITING CHARGES INCL GI PIPE (GRADE-B)/m	150	0	15.45	165.45
f)	FIBRE OPTICS CABLE LAYING(UNDER THE ROAD) / CRIMPING/ CONDUITING CHARGES INCL GI PIPE (GRADE-B) /m	190	0	19.57	209.57
g)	FIBRE OPTICS CABLE LAYING(OVERHEAD) / CRIMPING/ CONDUITING CHARGES /m	120	0	12.36	132.36
h)	UTP CABLE LAYING , CRIMPING / CONDUITING CHARGES INCLUDING PVC PIPE. FITTING ETC./m	20	0	2.06	22.06
i)	UTP CABLE LAYING (UNDER GROUND), CRIMPING/ CONDUITING CHARGES INCLUDING GI PIPE (GRADE-B), FITTINGS ETC./m	140	0	14.42	154.42
j)	UTP CABLE LAYING (UNDER THE ROAD), CRIMPING/ CONDUITING CHARGES INCLUDING GI PIPE (GRADE-B), FITTINGS ETC./m	180	0	18.54	198.54
k)	FIBER SPLICING Per Core	350	0	36.05	386.05

The above prices are FOR destination, inclusive of excise, customs duty, CST/ST, service tax, Insurance, Installation, testing and commissioning at site, freight handling & forwarding as per the present rate of taxes. The octroi / other duties & taxes, if any, shall be paid extra as per actual as per Clause 8(b) of **Annexure-XII**.

2. SCOPE

2.1 HARDWARE & SOFTWARE

2.1.1 This scope covers design, manufacture/assembly, testing at supplier's works before despatch, supply and installation/commissioning of the equipment (Servers, Routers, Switches, UPS and other connected equipment and System Software) for installation at various BBMB offices & integration of these in the existing LAN/WAN (The present schematic network diagram is attached at **Annexure-I**).

The broad scope of work to be undertaken shall be

- To supply, install and commission the Servers, Software, Networking Equipment, UPSs & other equipment.
- To set up and commission the Local Area Network segments including laying, crimping and terminating of the OFC and UTP Cables.. The proposed network diagram is placed at **Annexure-II**. The OFC network segments to be laid at Slapper are placed at **Annexure-III**. The estimated plan for laying UTP cables at various locations is placed at **Annexure-IV**. The specification for network cabling is placed at **Annexure-V**.
- The wireless based network connectivity is being proposed for various BBMB offices where leased line links are not feasible e.g. between BBMB Computer Centre Nangal & Bhakra powerhouses, BBMB Computer Centre Talwara & Pong Power House etc through a separate service provider. The configuration for these LAN Segments into the BBMB LAN/WAN setup shall have to be installed/ commissioned. The proposed wireless connectivity diagram is placed at **Annexure-VI**.
- All the necessary settings in the software/Hardware for setting up & commissioning of extended LAN segments shall be part of the work.

- e) Assigning of various TCP/IP & other addresses (to be provided by Purchaser), making of sub networks & assigning addresses shall be done in such a way so as to avoid any conflicts etc.
- f) In case any changes in the LAN & Hardware/Software presently operational at Chandigarh, Nangal, Sundernagar, Panipat, Jamalpur & Talwara Computer Centres are required to be made, the same shall be the responsibility of the firm to do & keep it operational.
- g) The firm shall provide complete system software support on various issues like installation & re-installation, networking aspects, re-loading of various software's etc or any other as may be required to keep the systems in perfect operating condition.
- h) The firm shall have to configure/install the Forefront Threat Management Gateway 2010 on the Win-2008 server and migrate the existing proxy server account operating on ISA 2004 Proxy Server.
- i) The firm shall have to install & configure GPS based Network Time Server & Install antenna at the roof top of 4 storied building at Chandigarh. All the servers & computers shall be time synchronized with this.
- j) Presently the ORACLE 10G database stands installed on the BBMB Server. The firm shall have to install the ORACLE 10G on the new blade server being procured at Chandigarh & migrate the existing Oracle data from old server to the new database server. It is also proposed to install a server at Sector-19, which shall act as backup server to the Oracle server. The firm shall have to install Oracle 10G on this server & configure process to automate the data replication between Oracle 10G Server at Data Centre to Sector-19 Server.
- k) Two blade servers are proposed to be used as Application Server(AS) in High Availability (HA)mode. The firm shall have to install & configure the AS to work in HA mode.
- l) The following applications / software's are proposed to be run of these blade servers.
 - i. Domain Controller
 - ii. Additional Domain Controller
 - iii. Forefront TMG 2010
 - iv. GPS based Network Time Server
 - v. Application Server
 - vi. Database Server
 - vii. Web Server
 - viii. Exchange Server
 - ix. Websense
 - x. Gateway AntiVirus
 - xi. System Management Server for patch management
 - xii. Source Code Version Control Software

All these functionalities shall have to be installed on these servers using virtualization.

2.2 SERVICES

- 2.2.1 Presently, Database Servers and Domain Controllers are located at four major locations i.e. Chandigarh, Nangal, Sundernagar & Talwara. The implementation of the BBMBs security policies & procedures, 3-tier web enabled application software packages etc requires a Master Domain Controller for BBMB and all the nodes/machines on BBMB LAN/WAN shall login to this controller as a result of which a user can login and access data/information pertaining to different locations / applications depending upon his rights/permissions. Each of the computer centres shall have an Additional Domain Controller which shall always be in sync with the Master Domain Controller. The MS Exchange Server shall be installed & integrated with the master domain controller at Chandigarh (SLDC Complex). The same is also to be installed/ configured at Nangal, Talwara & Sundernagar. Besides this, configuration changes as per security policies etc are required to be carried out on Servers, Routers and other critical devices. The broad scope is as under (Refer Network Diagram at **Annexure-II**):
- a) Creation of De-militarized Zone
 - b) Design of Windows 2008 based Active Directory(AD) for Root/Master Domain Controller & its implementation at six other Additional Domain Controller locations
 - c) Installation/ implementation of Centralized AD & Exchange 2010 Server at Data Centre & migration of existing Accounts from Exchange 2003
 - d) Implementation of BBMB Information Security Policies & Procedures
 - e) Installation & Implementation of Exchange Server at other 3 locations (so that local mails are distributed from these)
 - f) Joining of Desktops (Both existing about 300 with Windows-XP & 300 new being procured separately) to domain & migrating to new exchange solution.
 - g) Implementation of the Hardening document of BBMB for Servers, Routers etc.

The broad configuration & other changes required to be made & implemented are briefly described below:

Sr. No.	Description	Chandigarh		Nangal	Sundernagar	Talwara	Panipat	Jamalpur
		SLDC (Data Centre)	Sec-19					
1.	Creation of Demilitarized Zones for isolating critical Servers/Devices from rest of the BBMB network.	√						
2.	Setting up of Master Domain Controller	√						
3.	Creation Setting up of Additional Domain Controller.	√	√	√	√	√	√	√
4.	Synchronization of Additional Domain Controllers with Master Domain Controller	√	√	√	√	√	√	√
5.	Create users & Login -IDs		√	√	√	√	√	√
6.	Setting up of Group Policies Comprising							
	a) Password Policy	√						
	b) Desktop Policy	√						
	c) User Management Policy	√						
	d) Access Control Policy etc etc	√						
7.	Creation of Home folders for each user & assigning quotas, permissions etc.	√	√	√	√	√	√	√
8.	Integrate the TMG 2010 with the domain controller & grant users access	√						
9.	Integrate the main MS Exchange Server with the controller & create/migrate all users' mailboxes	√	√	√	√	√	√	√
10	Integrate all servers with the Domain Controller (Oracle, SQL, IIS, Antivirus Server) etc	√						
11	Installing MS Exchange server at every Additional Domain Controller	√	√	√	√	√	√	√
12	Configuring Mail (synchronized) for Senior Management to reside on Desktop and Exchange Server	√						
13	Implementation of single sign-on or transparent authentication	√						
14	Joining of the desktops to the domain	√	√	√	√	√	√	√
15	Implementation of E-mail policy on the Exchange Server	√	√	√	√	√	√	√
16	Creation of VLAN for servers	√						
17	Setting up of a Patch Management Server with a console	√	√	√	√	√	√	√
18	Adding all the nodes to the Patch Management Server & ensuring updation of nodes to happen successfully/automatically	√	√	√	√	√	√	√
19	Server/Critical Network Devices hardening to be implemented as per hardening documents of BBMB	√	√	√	√	√	√	√
20	Implementation of Network Management Policy	√	√	√	√	√	√	√

2.2.2 The following software products/ security solutions are being procured separately & shall be got installed on the server being procured at BBMB.

- Websense for URL filtering
- Appliance based firewall system
- Gateway AntiVirus
- Desktop based Antivirus
- SMS

The firm shall have to provide support on the above products during the warranty period along with the services listed at para 2.2 above & as mentioned in detailed technical specifications for the scope of work for Facilities Management Services (**Annexure- X**).

2.2.3 The firm shall have to provide support on all the issue mentioned in para 2.2. above during the warranty period.

2.3 FACILITIES MANAGEMENT SERVICES

2.3.1 The firm shall have to provide Facilities Management Services (FMS) for a period of five years as per scope defined in **Annexure-X**. **The firm shall provide experienced qualified resident service engineers (Two Nos) for FMS at the BBMB Data Centre.** The engineers will be deployed during the working hours of BBMB (9.00 AM – 5 PM) on all working days (Monday to Friday). The support in odd hours or on holidays will be extended subject to requirement of BBMB. Support at other locations where there are no resident engineers will be coordinated from Chandigarh Data Centre and/or may have to visit the location, if required. In case, additional manpower is required for maintaining the uptime in any emergency, the same shall be made available.

The terms & conditions of the Facilities Management Services are given at **Annexure-IX**.

3. DELIVERY PERIOD

- i) The supply, installation & commissioning of Servers(Sr.No. 1.1 to 1.8), Software (Sr. no. 2) and UPS's (Sr.No. 3) shall be completed within 20 weeks from the date of receipt of order **including one-time configuration changes / settings as per scope mentioned in para-2 above..**
- ii) The networking components including cabling within 20 weeks from the date of approval of cable laying plan. The detailed plan shall be prepared by the firm's representatives within 4 weeks from the date of receipt of order & submitted for approval of the purchaser. **The delay in the submission of drawings/plan by the supplier shall also invite the levy of penalty as specified in the Penalty Clause 5 of General Terms & Conditions of PO.**

For delay in delivery, penalty charges shall be levied as per clause 5 (penalty charges) of General Terms & Conditions of PO given in **Annexure-XII**. The delivery of the equipment and software shall be taken at various offices of BBMB located at Chandigarh, Nangal, Talwara and Sundernagar as given at **Annexure-XI**.

4. TERMS OF PAYMENT**4A. For equipment except one-time services, passive networking components & Labour Charges**

100% advance payment against Bank documents will be made on proof of despatch of material by the Rail/Road (for short-listed firms and public sector undertakings by any road transporter, for others by bankers approved transporter). Before allowing 100% advance payment against bank documents, a Bank Guarantee of the value of 10% of contract price shall be submitted, which shall remain valid for a period of one year from the date of final execution of the contract. The bank guarantee shall be furnished by the firm one month before the commencement of delivery.

4B. For one-time services / configuration changes

100 % payment of one-time configuration changes/ settings as per scope mentioned in para-2.1.1 & para 2.2.1 above shall be made after completion of this scope.

4C For passive networking components and labour charges

- i. 70% payment shall be made upon receipt of material (passive networking components) at site in good condition.
- ii. 10% out of balance 30% payment of passive networking components and 90% payment of labour charges shall be released after completion of cabling, termination work etc.
- iii. The balance 20% payment of passive networking components subject to adjustment as per actuals and balance 10% payment of labour charges shall be made after measurement & pentascanning testing (deemed date of commissioning) of all the networks.
- iv. The payment of Avaya/Equivalent certification shall be made after the certificate is received & shall not be linked with the payment at S.No. i, ii and iii above.

4D For Facility Management Services

The payment for Facilities Management Services shall be paid quarterly for a total life cycle of five years.

5. DETAILS OF EXISTING EQUIPMENT FOR BUY-BACK

The technical details and quantities of the existing equipment to be returned under buy-back are placed at **Annexure-VIII**. This equipment is presently in use at BBMB offices at Chandigarh, Nangal, Talwara and Sundernagar & elsewhere and the same shall be removed/taken back after the new machine has been installed and data has been transferred/copied on the new machines.

6. DESPATCH INSTRUCTIONS

The material duly insured and freight on pre paid basis shall be despatched as per distribution mentioned in **Annexure-XI** under intimation to the System Software Manager, SLDC Complex, Ind. Area Phase-1, BBMB, Chandigarh-1600 02 and Sr. Accounts Officer (P), Sector-19B, Madhya Marg, BBMB Chandigarh-160019.

7. DETAILED TECHNICAL SPECIFICATIONS

The detailed technical specifications (guaranteed technical particulars (GTP)) of the Servers, Software, Networking Equipment & Power conditioning equipment shall be as per **Annexure-VII**. The detailed Specifications for Facilities Management Services (FMS) shall be as per Annexure-X. **However, in case any equipment / software offered become end of sale / obsolete, latest equipment / software higher or meeting at least the minimum specifications of BBMB shall be supplied.**

8. COMPLETENESS OF EQUIPMENT

- i. Any fittings and accessories which may not have been specifically mentioned in the Purchase Order, but which are necessary for installation, commissioning & operation of the equipment, shall be supplied without any extra cost.
- ii. The LAN cabling will be considered complete only when it has been fully tested with penta-scanner & is ready for connection with server & computer.

9. SITE PREPRATION

The sites where the equipment is to be installed are ready in all respect. The suppliers shall check up all pertinent requirements at the sites and advise any addition/alteration/modification, if any, prior to the installation of the equipment.

10. RESPONSIBILITY OF DESIGN

The firm shall assume full responsibility for adequate design for the duty entailed to ensure trouble free long service under tropical conditions and shall use such arrangements, circuits and materials as conform to the best engineering practices for the operating conditions specified.

11. INSTALLATION AND COMMISSIONING

The firm shall be fully responsible for the installation and commissioning of the equipment, software and other peripherals without any extra cost, within the delivery period.

12. PERFORMANCE BANK GUARANTEE AND WARRANTY DEED

The supplier shall execute the Warranty Deed and Performance Bank Guarantee as provided in Clause 13&14 of General Terms and Conditions (**Annexure-XII**). The said Guarantee/Warranty Deed shall be furnished by the supplier on the standard Performa given at **Annexure -XIII (a) & XIII (b)**. The Performance Bank Guarantee and Warranty deed shall be furnished by the supplier prior to supply of equipment without which no payment shall be released.

13. WARRANTY

- i. The firm shall give five-year free comprehensive on-site Warranty for the equipment except software for which it shall be 3 months media warranty from the date of commissioning and in addition shall be governed by the warranty clause (Clause :12, **Annexure -XII** - General Terms & Conditions of Purchase order).
- ii. The firm shall ensure 95% uptime computed on monthly basis for all the items during warranty period of five years. If the up-time during warranty period is less than the specified limit, the warranty period for that item shall be extended by the same period by which the up-time falls short of this limit.

14. DRAWING, LITERATURE AND MANUALS

The firm shall provide complete set of drawings/sketches, literature, and manuals for insallation and use of the computer system.

15. EARNEST MONEY/SECURITY DEPOSIT

The earnest money deposited by the firm amounting to Rs. 2, 00,000/- (Rs. Two Lac only) vide DD No. 231794 dated 23/5/2011 with the bid shall be converted into Security Deposit immediately on the receipt of the acceptance of the purchase order and shall be retained as a guarantee for faithful and satisfactory execution of the Purchase Order and shall be refunded after expiry of warranty period provided nothing is due from supplier on any account. However, the earnest money/security deposit furnished by the firm shall be forfeited, in part or in full, under the following circumstances:-

- a) If the firm withdraws his tender at any stage during the currency of his validity period, his earnest money shall stand forfeited in full.
- b) If the P.O. has been issued but the supplier refuses to comply with it, the earnest money deposited by him shall be forfeited in full, irrespective of the fact whether the Board sustains any loss on account of his default or not. This forfeiture shall be without prejudice to the right of the Board to claim any other damages as admissible under the law as well as to take such executive action against the supplier as black listing, etc.
- c) Where the purchase order has been accepted but the supplier stops making the supplies after partially fulfilling the purchase order, the security deposit shall be retained and adjusted against any loss that may be caused to the Board through risk purchase from alternative source and/ or any other damage recoverable from the supplier under the terms of the contract.
- d) In the event of a breach of contract in any manner, the security deposit shall be forfeited and adjusted against the claim of the Board on the supplier for any damage or for any loss sustained by the Board on account of such breach.

16. METHOD OF RAISING INVOICE

- i.) Invoices/bills for all payments shall be prepared in triplicate by the supplier out of which original copy (duly stamped and pre-receipted) and one spare copy alongwith despatch documents shall be sent to the Sr. Accounts Officer, BBMB, Sector 19-B Madhya Marg, Chandigarh. The third copy alongwith copy of despatch documents/challan shall be sent to the consignee. The Supplier shall give at least a week's notice before despatch of

- equipment to the Sr. Accounts Officer, Sector-19, BBMB, Chandigarh so that he could make necessary arrangement for funds for releasing payment.
- ii) The despatch documents shall consist of:
- a) Copy of invoice.
 - b) Despatch Notes/challan showing the amount due, brief description of the material, special marking thereon if possible.
 - c) Railway receipt/Airways bill/Transport Goods receipt.
 - d) Certificate for central sales tax, if claimed.
 - e) Copy of despatch authorisation/inspection report.

The terms and conditions of this purchase order are enclosed at Annexure-XII.

Two copies of the purchase order are enclosed herewith. You are requested to acknowledge the receipt. A copy of the purchase order will be returned after signing each and every page of P.O. by the authorized representative of the firm in token of the unconditional acceptance of the purchase order. The firm shall also furnish documentary evidence that the signatory is an authorized representative of the firm.

मुख्य अभियंता / उत्पादन

Encl: 1. Annexure-I.II.III, IV, V, VI, VII, VIII, IX, X, XI, XII, XIII(a), XIII(b).

2. Two copies of Purchase Order

EXISTING BBMB NETWORK

ANNEXURE -I



Internet
Bandwidth from
NIC

**CHANDIGARH, BBMB,
Sectt. Bldg. Server &
LAN**

ROUTER-1760

PANIPAT SE/O&M
Office Complex & XEN
O&M COMPLEX LAN

ROUTER-1760v

APPROX DIST FOR OFC 550 M

**CHANDIGARH,
SLDC Bldg. LAN
Server**

ISDN Router

ROUTER 3640

JAMALPUR
SE/O&M Office
Complex LAN

ROUTER-1760v

ISDN Link

ROUTER-1760v

**NANGAL Computer
Centre LAN Server**

Bldg. -1

Bldg. -2

Bldg. -3

Bldg. -4

Bldg. -5

Bldg. -6

ROUTER-1760v

ISDN Link

**SUNDERNAGAR
LAN Server**

Bldg. -1

Bldg. -2

Bldg. -3

Bldg. -4

ROUTER-1760v

ISDN Link

**TALWARA LAN
Server**

Bldg. -1

Bldg. -2

Bldg. -3

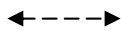
Bldg. -5

Bldg. -4

Leased Line



OFC Connection

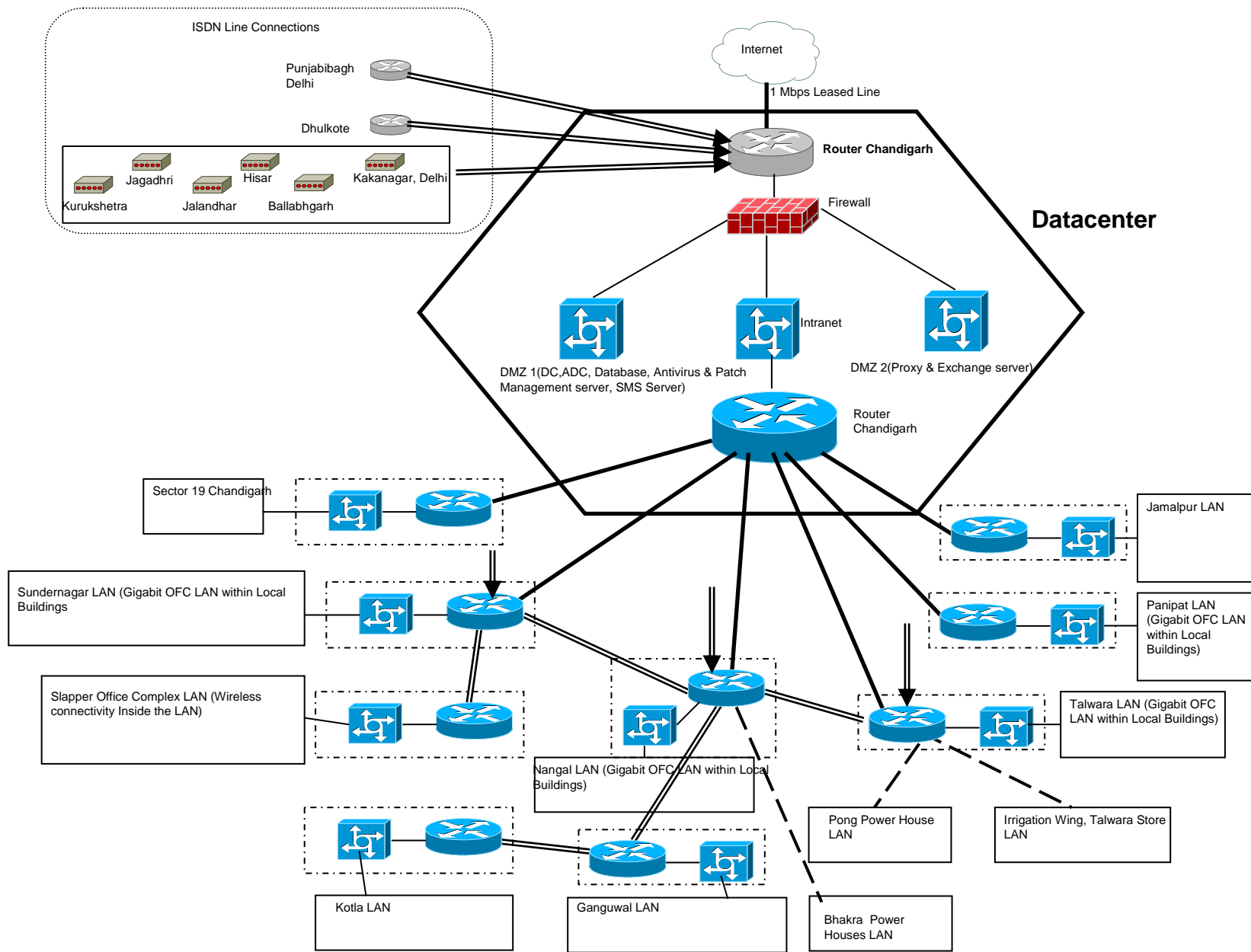


Remote Offices connect to BBMB Server thru ISDN Dialup Links

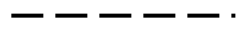
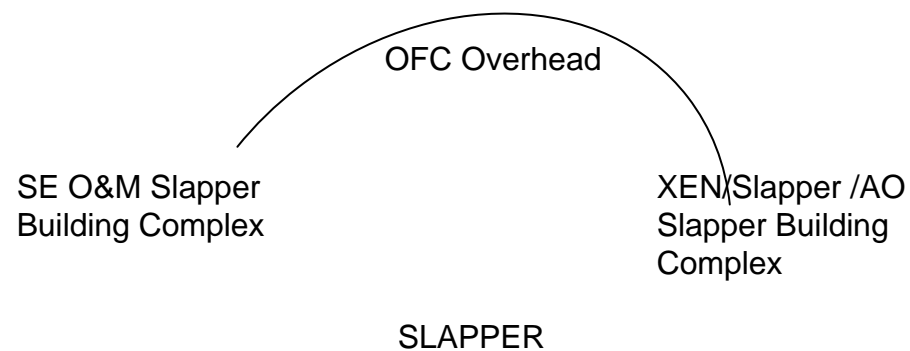
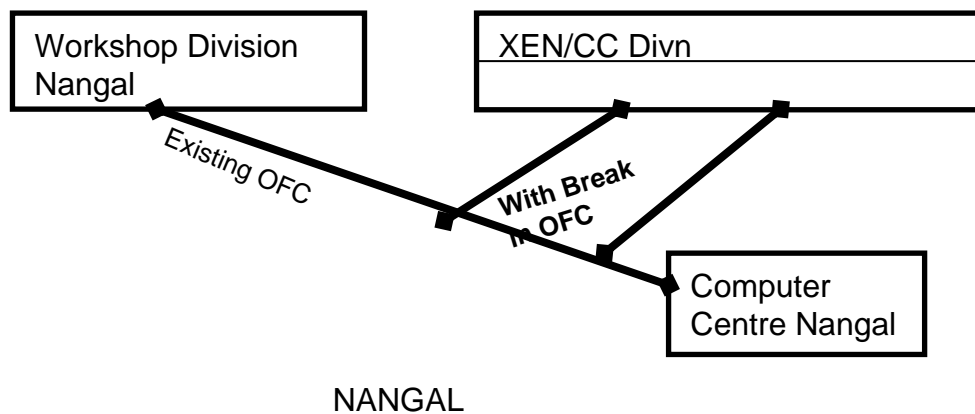
Within each Bldg. UTP Cable has been laid.

PROPOSED BBMB NETWORK DIAGRAM

Annexure-II



PROPOSED OFC LAYING



Wireless Connectivity
Ethernet LAN



Leased Lines (proposed)

PROPOSED UTP CABLE LAYING

UTP Cable Laying at following locations

Nangal (Incl Bhakra, Ganguwal, Kotla)	-	50 Points
Sundernagar (Incl Slapper, Pandoh)	-	30 Points
Talwara (Incl Pong Power House)	-	30 Points
Chandigarh Boards Office & SLDC, Complex	-	20 Points

SPECIFICATION FOR NETWORK CABLING

1. The LAN segments are proposed to be set up at Chandigarh, Nangal, Dhulkote, Slapper & Delhi. The bidder, if so desired, may visit the sites of BBMB at his own cost before submitting the bid. The approximate quantity of networking components has been worked out.

2. TESTING

The entire network & networking shall be thoroughly tested to ensure that the as-built performance meets the requirements specified herein and such other specifications referenced either explicitly or implicitly herein.

Installation testing shall be carried out in accordance with a formal test plan submitted to BBMB. Test results shall be forwarded to BBMB, highlighting all anomalies, to demonstrate that the performance of the installed cabling is satisfactory. Inspection and testing of these parameters by BBMB, or waiver thereof, does not relieve the Contractor of responsibility for testing the parameters listed.

The testing shall be as per AVAYA or equivalent standards. If network is tested for certification other than AVAYA, then the 'Testing' shall be as per approved/recognized test procedures (TIA/EIA standards).

The testing may generally include the following:

Test Specifications

UTP Cabling

The Contractor shall perform the following tests and calculations for LINK SPECIFICATIONS & CHANNEL SPECIFICATIONS upon new cabling at completion of the installation. All testing is to be completed with a standard field tester.

- i) Wire map test c/w Continuity, polarity and pair assignment of all pairs in a cable run;
- ii) Length;
- iii) DC loop resistance;
- iv) Attenuation;
- v) Near end crosstalk (NEXT) loss;
- vi) Attenuation/Crosstalk Ratio (ACR);
- vii) Power sum near end crosstalk (PSNEXT) loss
- viii) Equal level far end crosstalk (ELFEXT);
- ix) Power sum equal level far end crosstalk (PSELFEXT);
- x) Return loss;
- xi) Propagation delay;
- xii) Propagation delay skew.

The above list of tests is only indicative and may include more tests as per the requirements.

The test limits shall be as specified by AVAYA.

Optical Fibre Cabling

The Contractor shall perform the following LINK SPECIFICATION tests and calculations upon all new cabling at completion of the installation. Transmission characteristics should be recorded using a recording optical TDR.

- a. Length;
- b. Multimode modal bandwidth (at 850nm and 1300 nm) for multimode cables;
- c. Singlemode modal bandwidth (at 1310nm and 1500 nm) for singlemode cables;
- d. Propagation delay;
- e. Optical attenuation (Link loss);
- f. Return loss;

The measurement method employed for optical fibre cabling shall provide a measure of the loss at the point of interconnection between the test lead and the OF cable at each end and shall be submitted to BBMB for approval prior to commencement of testing.

The test limits shall be as specified for Optical fibre links by AVAYA.

Witnessing of Sample Tests

BBMB may require that its representative witnesses samples of the specified cable tests at random. The choice and selection of the sample cable runs to be witnessed shall be at the sole discretion of BBMB or its representative. All such tests shall be approved by BBMB before the completed installation is accepted.

Where all tests conducted according to the preceding schedule are satisfactory the installation shall be accepted as complete. Where any item fails to meet specification, the identified defect shall be remedied and the cable link retested.

DOCUMENTATION

The Contractor shall update all relevant site records and specification documentation, and shall provide the following documentation, bound, indexed and suitably presented for each site:

Site plan showing the physical location and designation of each cable route, cable ducts and cable trays ("as built" drawings);

Floor / building layout showing all IO outlet locations, numbering, rack and frame information;

Cable run list showing "A" and "B" end location of each cable room-wise;

Complete set of all test results. These may be presented electronically if there are a large number of test results. Each set of results shall be clearly identified by the relevant cable run or outlet designation;

Where cabling is found to be faulty during acceptance testing, the results of both the original (failed) tests and the final results shall be supplied. Each set shall be clearly identified as the results before or after corrective work was undertaken;

Documentation of all cabling components used, including manufacturer's part number;

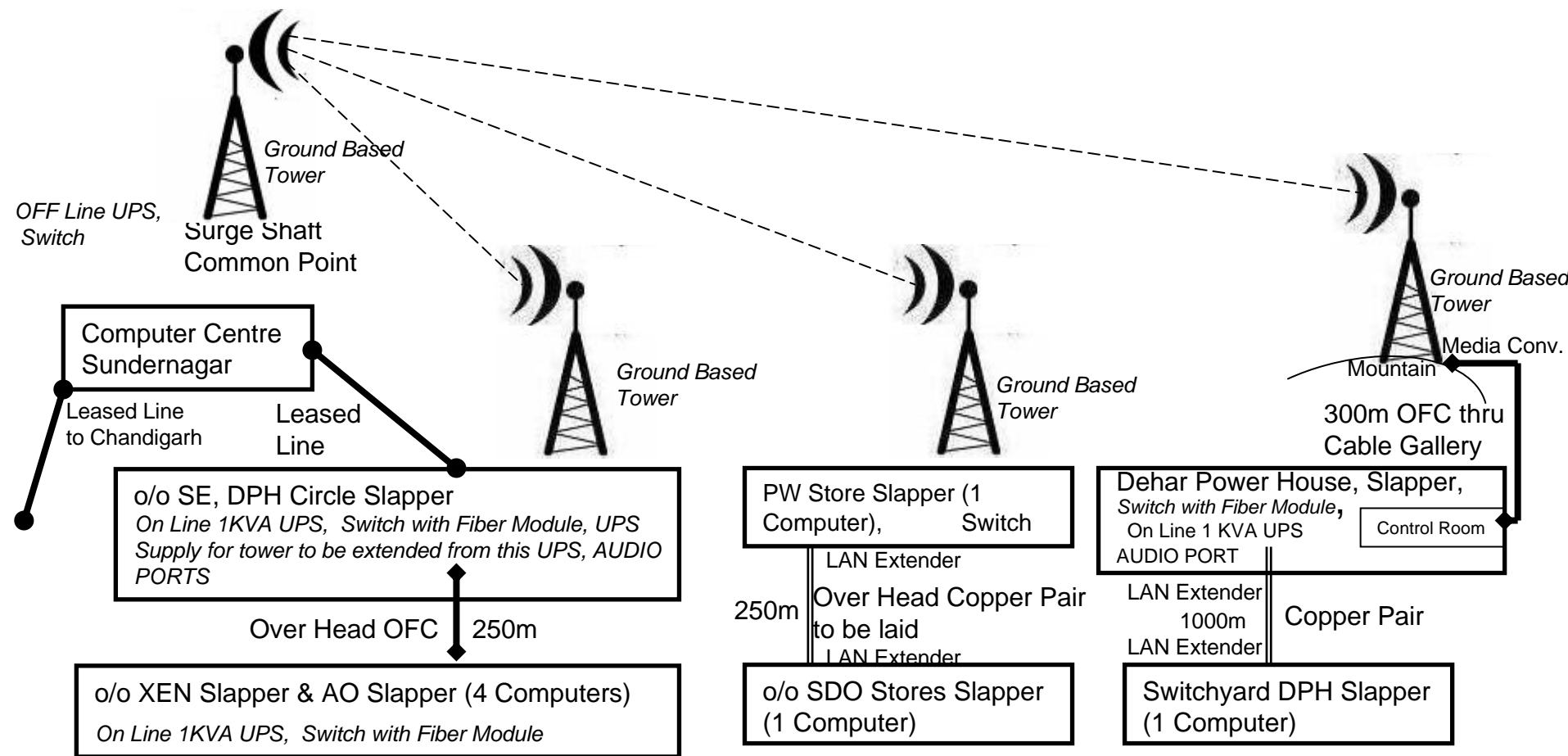
Site certification documentation;

Fault identification and resolution procedures.

Documentation and drawings shall be prepared using a suitable computer drafting program.

3. The cable laying should be done in PVC conduits (round/flat) of appropriate size. The supplier shall be responsible for laying the actual length of cable as per site plans to be got approved from the purchaser. The payment for the laying shall be as per the actual length used/laid. If any minor civil works like boring/ making holes in the walls etc are required to be done, the same shall be carried out by the supplier without any extra cost.
4. Where the length of cable exceeds 1 metre within a building, the same will be housed in a PVC conduit. The conduit must be laid along the wall/roof so as to give an aesthetic look. If the cable has to cross the floor it shall be housed in a GI/PVC pipe and the pipe shall be beneath the floor.
5. Where the cables are to be laid through open ground including the public road etc, these shall be protected by housing the same in GI pipe embedded at a depth of not less than ½ metre below the ground surface with a brick lining underneath the same.
6. The pit/pathway of the cable shall be documented & drawing handed over to purchaser for future maintenance.
7. The joints in the cables are not permitted.
8. The cable terminating/entering from the ceilings/ground shall be properly sealed so that ants, rodents, water etc can not damage it.
9. **Compatibility with the present LANs at BBMB offices is a must.**
10. **After laying cable, the trenches shall be filled up & recarpetted (premix carpeting of the roads) by the supplier.**
11. The excavation work may involve various soil conditions such as soft soil, hard soil etc. But for the purpose of this contract there will be only one classification of soil i.e ordinary soil only.
12. The RCC/Steel route indicator should be fixed for the OFC cable being laid underground outside the building at about 100/200 metres or say at each gap point/turns in the pipe line during laying.
13. **Before the work is started, 'Caution-cum-information' sign/board shall be positioned by the bidder where digging is planned.**
14. During the laying of OFC, the firm should take preventive steps to ensure that no accidents take place & no other cable is damaged. The bidder shall be responsible for payment of compensation amount to the departments/local bodies concerned for any accident that is caused.

PROPOSED WIRELESS CONNECTIVITY AT BBMB SLAPPER

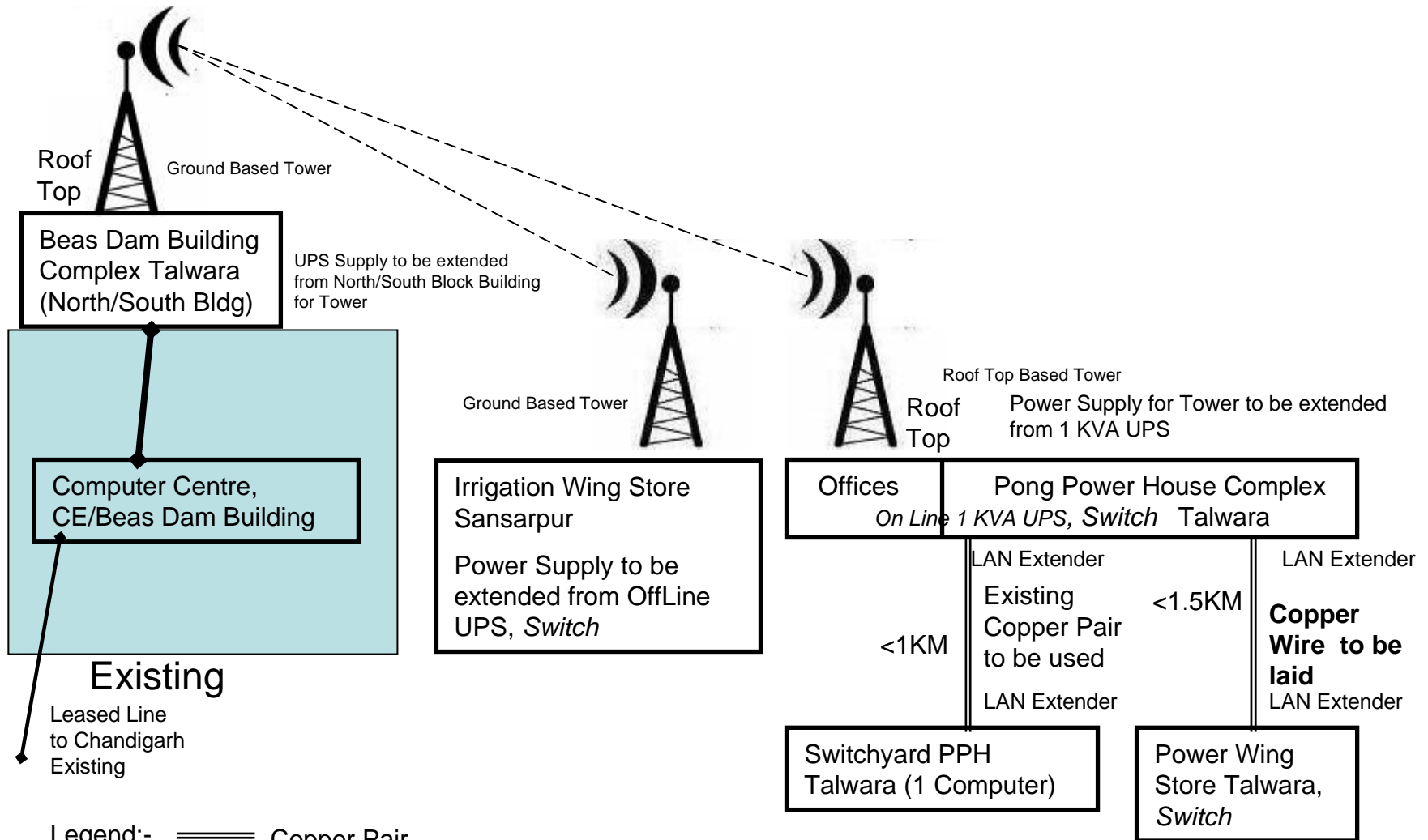


Legend:-

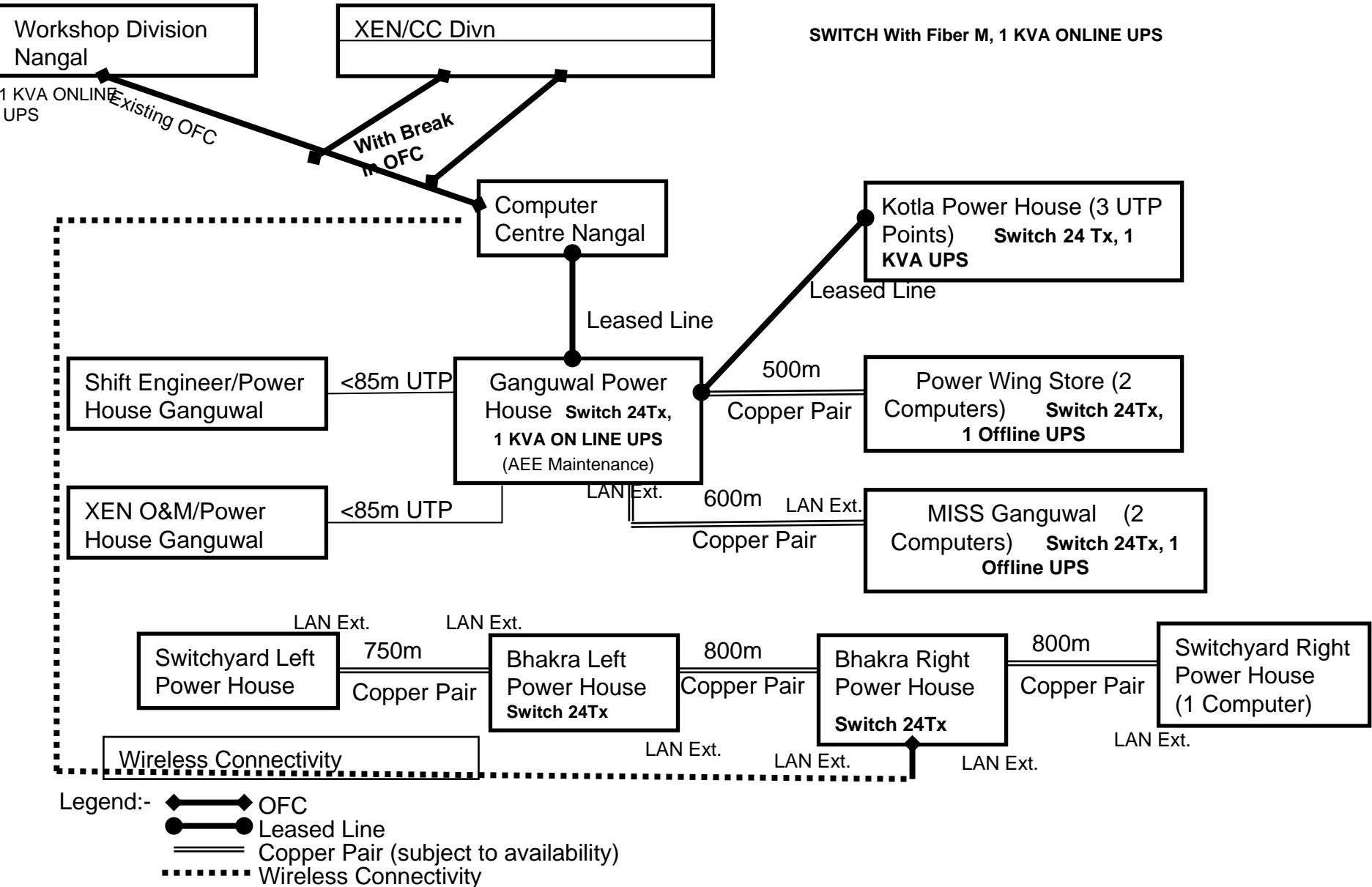
- ◆◆ OFC
- Leased Line
- ══ Copper Pair (Existing)

UTP Cabling within Dehar Power House and Power Wing Store Building etc.

PROPOSED WIRELESS CONNECTIVITY AT BBMB TALWARA

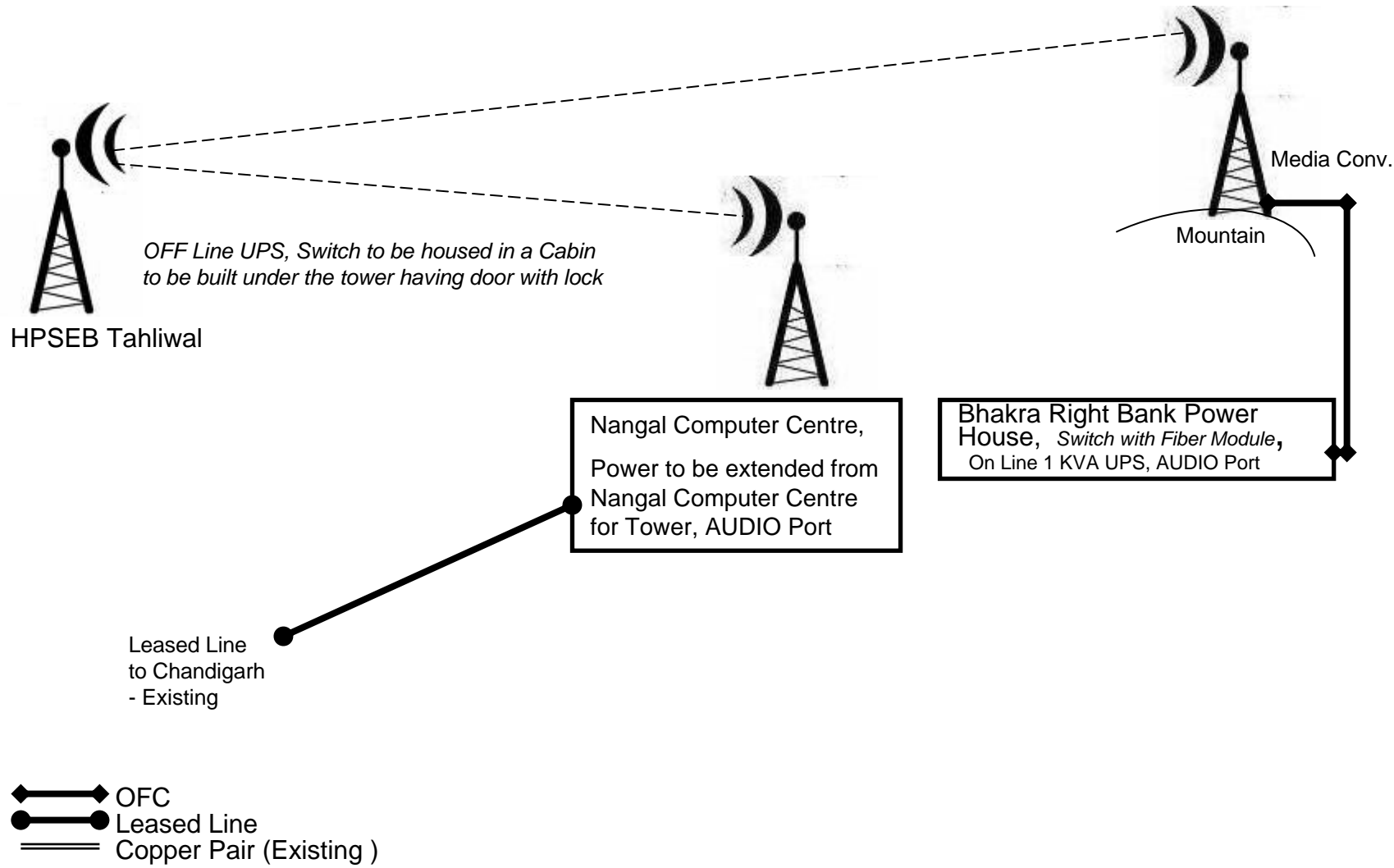


PROPOSED CONNECTIVITY AT BBMB NANGAL, GANGUWAL & KOTLA



UTP Cabling within Bhakra (Left), Bhakra Right, Ganguwal & Kotla Power Houses etc.

PROPOSED WIRELESS CONNECTIVITY AT BBMB NANGAL



GURANTEED TECHNICAL PARTICULARS			- ANNEXURE-VII
Sr. No	Make/ model	Make/Model Offered by HCL Infosystems Ltd.	
1.1	Blade Servers (Type -1)	HP BL 460 C	
1.2	Blade Servers (Type -2)	HP BL 680 C	
1.3	Specification for High Performance,GPS based Network Time Server. (Network Protocols)	Symmetricom S 350	
1.4	Cabinet/Chassis for Blade Servers with following configuration	HP C 7000	
1.5	Backup Solution for Servers with the following details	HP / SYMMANTEC BACK UP EXEC	
1.6	Rack	HP/HCL	
1.7	Server (Database)	HP ML 350/HCL IGL 2701HC	
1.8	Server for Talwara, Sundernagar & Nangal	HP ML 350/HCL IGL 2701HC	
3.1	ON LINE UPS OF 5 KVA RATING WITH 60 MINUTES BACKUP (Including Batteries) (TRITRONICS/ AUTORONICA/ APC/ TATA LIEBERT/NUMERIC MAKE)	TRITRONICS/AUTORONICA/ NUMERIC/EMERSON	
4.1	ROUTER For Chandigarh	CISCO 3945	
4.2	Router For Sundernagar & Nangal Computer Centres	CISCO 2911	
4.3	Router (For Ganguwal & Slapper)	CISCO 2911	
4.4	LEASED LINE MODEMS (G.703 and V.35 pair)	ATRIE WIRESPAN 3000/ANDA TELECOM ATP AM SPAN 2000 GM	
4.5	LAN Extender	ATRIE WIRESPAN WS 5300/ANDA TELECOM AT 6200	
4.6	EDGE / DEPARTMENT/ BUILDING SWITCH	CISCO 2960 S	
S. No.	Guaranteed Technical Particulars DESCRIPTION		
1	HARDWARE - SERVERS & COMPUTERS		
	Blade Servers		
1.1	Blade Servers (Type -1)		
	CPU Server class chipset 5600 Series processors to be configured with two 2.4 GHz, 1333 FSB, 80W - Quad-core processor.		
	Memory Server should be supplied with 24 GB memory and scalable to 96 GB. The server should provide Twelve (12) DDR3 Registered or Unbuffered DIMM Memory Slots. Should support Advanced memory protection technologies like AECC,memory mirroring and memory lockstep mode.		
	HDD Should be configured with 2 x 146GB @ 15k rpm SAS drives. The internal storage should be configured in RAID 1 for OS. Hard drives to be hot-pluggable and of small form factor. Storage controller capable of providing RAID 0, 1 configurations with upgradeability to 256 MB Battery Backed Up Write Cache		
	Expansion Slots / Ports Should have a minimum of 2 PCIe based slot and simultaneously host interconnects of Ethernet,FC fabrics. Server to provide two network ports for connectivity to Ethernet switch. Should have Lan-on-Motherboard feature providing 10Gb speeds in the design supporting technologies in TOE,iSCSI and RDMA Ports to be available for USB,Network and management		
	Management Should provide remote management software capable of providing graphical interface, virtual media and multi-factor authentication. Server management software capable of providing role-based security, alerts of critical component failure (Hard drive, memory, CPU) and notify the same using email, SMS.		
1.2	Blade Servers (Type -2)		
	CPU Configured with 4 * 6540 Hexa Core processor & scalable to four processor on same chipset with in the box.		
	Memory Server should be supplied with 32 GB memory and scalable to 1TB.Should support Advanced memory protection technologies like ECC,memory mirroring and memory lockstep mode.		

GURANTEED TECHNICAL PARTICULARS		- ANNEXURE-VII
	HDD Should be configured with 2 x 146GB @ 15k rpm SAS or SSD drives. The internal storage should be configured in RAID 1 for OS. Hard drives to be hot-pluggable and of small form factor. Storage controller capable of providing RAID 0, 1 configurations with upgradeability to 256 MB Battery Backed Up Write Cache	
	Expansion Slots / Ports Should have a minimum of 4 PCIe based slot and simultaneously host interconnects of Ethernet,FC fabrics. Server to provide two network ports for connectivity to Ethernet switch. Should have Lan-on-Motherboard feature providing 10Gb speeds in the design supporting technologies in TOE,iSCSI and RDMA Ports to be available for USB,Network and management	
	Management Should provide remote management software capable of providing graphical interface, virtual media and multi-factor authentication. Server management software capable of providing role-based security, alerts of critical component failure (Hard drive, memory, CPU) and notify the same using email, SMS.	
1.3	High Performance,GPS based Network Time Server.	
	Network Protocols	
	NTP (v2-RFC1119.v3-RFC1305, v4- No RFC)	SNMPv1, v2c, v3 (RFC3584)
	NTP Unicast, Broadcast, Multicast, Autokey	MIB II (RFC1213)
	SNTP Simple Network Time Protocol	DHCP (RFC2131)
	(RFC4330)	Telnet (RFC854)
	TIME (RFC868)	MD5 Authentication (RFC1321)
	DAYTIME (RFC867)	RADIUS (RFC 2865)
	HTTP/SSL/HTTPS (RFC2616)	SMTP Forwarding
	SSH/SCP (Internet Draft)	IPv4, IPv6 and IPv4/IPv6 Hybrid
	Key management protocols can be individually disabled	
	LAN 1: Management & Time protocols; LAN2, 3 & GbE	Time protocols only
	Server Performance	
	7000 NTP requests per second while maintaining accuracy associated with reference time source. The accuracy is inclusive of all NTP packet delays in and out of the SyncServer as measured at the network interface. Client synchronization accuracy to server on a LAN is 0.5-2 milliseconds (typical). The Syncserver easily supports many hundreds of thousands of NTP clients. NTP request handling capacity remains the same regardless of Stratum level	
	Stratum 1 via GPS: Overall time stamp accuracy of 7 microseconds to UTC with a variation of less than 42 microseconds typical	
	Stratum 1 via Dial-up modem:<50 milliseconds to UTC (<20 ms typical)	
	Stratum 2: Peering can be used as the primary mode of operation or as a back up mode in case the primary reference signals are lost. Time stamp accuracy depends on NTP peer server (s).	
	Holdover Accuracy/Oscillator Aging	
	TCXO (Standard)	18 milliseconds/day <1E-06/month
	OCXO (optional)	1 milliseconds/day <1E-07/month
	Rubidium (optional)	6 microseconds/day <5E-11/month
	GPS Receiver/Antenna	
		12 channel parallel receiver
	Minimum number of satellites for time	1 intermittently
	GPS Time traceable to UTC (USNO)	
	Accuracy	<50 ns RMS, 150 ns peak to peak to UTC, ≥4 satellites tracked
	Internal Analog Modem	
		Telecom approved in more than 50 countries
	Time Encoding	ACTS, JJY and ITU -R TF583.4
	Mechanical / Environmental	
	Size	1 U rack mount
	Power	100-240 VAC, 50-60 Hz, 25 watts
	Certifications	FCC, CE (RoHS), UL, PSE
	Front Panel	
	Display	Sharp, high -resolution 32x256 dot-matrix vacuum-fluorescent. 1, 2 or 4 line
	Keypad	0-9 numeric, up down, left, right, ENTER, CLR
		TIME, STATUS, MENU. Keypad lockout

GURANTEED TECHNICAL PARTICULARS		- ANNEXURE-VII
	LEDs	
	Sync	Time reference status
	Network	Network connection status
	NTP	NTP activity
	Alarm	Fault condition
	Serial	DB9-F 9600, N, 8, 1
	USB	For back up, restore and upgrade operations
	Rear Panel	
	Network (4x)	1x RJ-45 10 Base-T/100Base-Tx/1000Base-T Gigabit Ethernet
		3x RJ-45 10Base-T/100Base-TX Ethernet
		Speed/Duplex: Auto, 10/full/half, 100/full/ half
	Sysplex	DB9-M RS-232
	GPS	BNC L1, 1575 MHz
	IRIG in:	BNC IRIG A/B/E/G/NASA36/XR3/2137/IEEE-1344
		AM: 1V to 8 V p-p, Zin>5K ohms
		DCLS:<1.5 V for logic 0. >2.4 V for logic1
	IRIG out:	BNC IRIG A/B/E/G/NASA36/XR3/2137/IEEE-1344
		AM: Ratio 3:1 +/- 10%, AMP: 3.5 +/- 0.5 V pp, Z out 50 ohms
		DCLS:<0.8 V for logic 0. >2.4 V for logic1, Zout 50 Ohms
	1 PPS-in	BNC Rising edge active, TTL into 270 ohms
	1 PPS-out	BNC Rising edge on-time, TTL into 50 ohms
	10 MHz-in	BNC Sine wave or square wave, 1Vpp to 8Vpp, Zin>50K ohms
	10 MHz-out	Sine wave >2Vpp & <6Vpp into 50 ohms
		Sine wave>6Vpp & <8Vpp no load
	Modem	RJ-11 analog phone jack
	Radio	BNC, optional antenna required for operation
	Relays	2x, SPDT (Form C)
1.4	Cabinet/Chassis for Blade Servers with following configuration	
	Chassis Support for full height and half height blades in the same enclosure holding upto 14 Intel Xeon Servers. Same enclosure should support Intel Xeon/AMD Opteron/RISC/EPIC based blades Same enclosure should support server, storage and expansion blades to enable consolidation of hardware .Should support simultaneous housing of Ethernet,FC,iSCSI,IB interconnect fabrics offering Hot Pluggable & Redundancy as a feature for the mentioned I/O devices	
	Ethernet Switch Ethernet Switching Modules to be provided in redundant configuration for Connecting to all the blade servers to external Switch. Configuration should help minimize the Ethernet Cables	
	SAS Channel Modules The Blade Chassis should be configured with redundant SAS SAN Switches.	
	Management Module System Management Port to allow simultaneous management access of multiple Blade Servers in the Chassis. GUI, console-based deployment server to set up multiple OS and application configurations and Drag-and-drop servers into configurations	
	Power Modules The enclosure should be populated fully with power supplies of the highest capacity available with the vendor. Power supplies should support N+N as well as N+1 redundancy configuration, where N is greater than 1.Should offer choice of a single phase or 3 phase power subsystem for flexibility in connecting to datacenter power enabled with technologies for lower power consumption.Guaranteeing complete availability even on failure of any 2 power units across the enclosure.	
	Cooling Each blade enclosure should have a cooling subsystem consisting of redundant hot pluggable fans or blowers enabled with technologies for improved power consumption and acoustics	

GURANTEED TECHNICAL PARTICULARS		- ANNEXURE-VII
	<p>Management Software Should be able to perform comprehensive system data collection and enable users to quickly produce detailed inventory reports for managed devices. Software should save the Reports for further analysis. Should provision for a single console to monitor multiple enclosures Should support simultaneous remote access for different servers in the enclosure The management/controlling software's must be from the OEM itself. Management Software Licenses for a fully populated Blade Enclosure should be given. The software should provide Role-based (admin, user, operator, etc) security which allows effective delegation of management responsibilities by giving systems administrator's granular control. The management software should provide proactive notification of actual or impending component failure alerts. Should support automatic event handling that allows notification of failures via e-mail. Should be able to perform comprehensive system data collection and enable users to quickly produce detailed inventory reports for managed devices. Software should save the Reports in some format for further analysis. Should help to proactively identify out-of-date BIOS, drivers, and Server Management agents and enable the remote update of system software/firmware components. The server performance monitoring software should be able to detect, analyzes, and explain hardware bottlenecks. Also it should be able to log the data over time and allow it to replay the same in a short time frame for performance analysis.</p> <p>The Deployment software should provide for User friendly GUI/ console-based deployment to set up and install multiple OS and application configurations in individual blade server. The blade system should have the capability of managing all the blades in the Enclosures simultaneously capable of monitoring both physical and virtualized environments with single signon capability for all devices in the enclosure.</p>	
	<p>Storage (Internal or External)</p>	
	<p>Operating System & Clustering Support The storage array should support industry-leading Operating System platforms including: <i>Windows 2008</i> Offered Storage Shall support all above operating systems in Clustering.</p>	
	<p>Capacity & Scalability The Storage Array shall be offered with 3.0 TB Capacity using 300GB drives. Storage shall be scalable to minimum of 90 number of drives or greater than 25TB using 300GB SAS drives.</p>	
	<p>Front-end Ports Offered Storage subsystem shall have total of 8 number of native SAS ports running at 6Gbps speed.</p>	
	<p>Back-end Offered Storage subsystem back-end engine shall be running on latest SAS (6Gbps) loop speed.</p>	
	<p>Architecture Offered storage subsystem shall be end to end 6Gbps SAS. The storage array should support dual, redundant, hot-pluggable, active-active array controllers for high performance and reliability</p>	
	<p>No Single point of Failure Offered Storage Array shall be configurable in a No Single Point of configuration including Array Controller card, Cache memory, FAN, Power supply etc.</p>	
	<p>Disk Drive Support Offered Storage Array shall support minimum 146/ 300 / 450/ 600GB hot-pluggable Enterprise SAS hard drives along with S-ATA (1000 & 2000GB) drives. For green datacenter initiative, Storage subsystem disks shall support Spin down feature for drives</p>	
	<p>Cache Offered Storage Array shall be given with Minimum of 2GB cache per controller in a single unit after removing the operating system overhead. Cache shall be backed up in case of power failure for indefinite time either using batteries or capacitors or</p>	
	<p>Raid Support Offered Storage Subsystem shall support Raid 0, 1 , 1+0 , 3, 5, 5+0 and Raid 6 with Dual Parity Protection</p>	
	<p>Global and dedicated Hot Spare Offered Storage Array shall support Global hot Spare for offered Disk drives. Storage subsystem shall also have the flexibility to assign dedicated spare for raid sets.</p>	
	<p>Logical Volume Storage Subsystem shall support minimum of 512 Logical Units.</p>	
1.5	<p>Backup Solution for Servers with the following details</p>	
	Autoloader with one LTO-4 tape drive with rack mount kit,	
	Number of Drives : 1	
	Number of Slots : 8	
	Capacity (native) : 6.4 TB	
	Capacity (compressed) : 12.8 TB	
	Performance (maximum, native) : 432 GB/h	
	Performance (maximum, compressed) : 864 GB/h	
	Interface : Ultra 320 SCSI LVD, SAS 3Gb/s	
	Cartridge Loading : 2 Magazines	
	Form Factor : 1U	

GURANTEED TECHNICAL PARTICULARS		- ANNEXURE-VII
	Remote Management (Web GUI) : System Status, Drive Operations, Remote Diagnostics, Remote Management	
	Certification Marks CE, UL, C-UL, GS / TÜV, VCCI, C-Tick	
	10 Data Media, 1 Cleaning Media with the following features of backup Software, The Backup Server Software should support MS Windows for the Master/Media Server. There must be support for the latest version of Windows Server OS	
	Backup Software should have an Microsoft Tape Format, which would ensure that the backup data can be read by basic Windows OS without even using any backup software	
	Should have active directory features like:	
	Online recovery of individual active directory objects	
	Should be able to restore AD objects without rebooting AD domain controller	
	Should support 2003/2008 active directory domain services	
	Backup Software should provide, an Online Backup for all the standard and commercially available databases and applications like MS-SQL, ORACLE, Exchange, Active Directory, Share Point Server, DB2 etc.	
	Backup Software should be capable doing a granular recovery for file systems, Exchange and Active Directory, so that even a single file/ single mail/ a single user attribute can be restored from the backups.	
	Backup Software should support the Continuous Data Protection technology for protecting file-systems, exchange servers etc.	
	The Backup Software should support Backup to Disk, so that there can be simultaneously read and write of Backup data from the Disk (a Recovery Operation from the Backup Disk, should be possible, for some clients, while the Backup is happening to the Disk for a few other Clients)	
	The Backup Software should have inbuilt support for 128 Bit AES Encryption.	
	The Backup Software should provide Open File backup for all Desktops.	
	The Backup Software should provide system recovery functionality for windows systems, so that in case of a failure machines can be quickly recovered to their running state.	
	Should allow backup jobs to be targeted to specific slots within a tape autoloader or library; mix drive types within a tape library.	
	The backup software should support full integration to virtual environment like VMWare and Microsoft HyperV for the backup and recovery of full virtual machines and the individual files and folders inside them	
	Should support single pass backup for faster backup/recovery	
	Necessary agents should be provided as per the server list and configuration.	
	Bare Metal Recovery :	
	Should support for Dissimilar Hardware	
	Should be able to quickly recover the system	
	Should support for windows 2000/2003/2008	
	Should support conversion to and from virtual environment	
	Should have support for VMWare, Microsoft HyperV & Microsoft Virtual Server	
	Should support for 32 bit & 64 bit windows	
	Should support scheduling of recovery points	
	Should be able to take incremental backups after full backup so that the only changes are backed up in incremental backup sets.	
	Should auto-detect hardware and install appropriate drivers	
	Should support saving of recovery points at FTP locations, DAS, NAS, USB Drive, DVD drives	
	Should have manager console to manage recovery points of all servers from central location	
1.6	Rack Size of the Rack : 42 U Front and fully perforated steel door Castor Wheel with Brakes & Lock The server rack should come with 2 Nos of Stationery Shelf The server rack comes with two Nos of Horizontal Cable Manager and Vertical Cable Manager The server rack should come with Roof Fan Tray with min 4 Fans Min 17" LCD Foldable 1U Monitor with Keyboard & Mouse	
1.7	Server (Database)	
	CPU	2 x Intel Xeon Quad Core Processor E5620 (2.4 GHz or higher with 12MB Cache or higher & 5.86 GT/s or higher) or Higher
	Memory	18 GB Registered DDR3 with ECC, 1066 MHz or higher Memory upgradable to 192 GB through 12 DDR3 DIMMs
	DIMM Slots	12 DDR3 UDIMM/RDIMM ECC 800/1066/1333 MHz
	Chipset	Intel® 5520 + IO Controller HUB ICH10R
	PCI Slots	Minimum of 6 PCI Slots including PCI & PCI-E slots
	Disk Drives	3* 300 GB SAS (15k rpm) Hot Swappable Hard Disks with RAID 5 Enabled
	Disk Controller	On board SAS controller/ports
	Monitor	WITHOUT MONITOR
	Ethernet	Dual port Intel gigabit ethernet controller with IOAT feature
	Graphics	Server Engines* LLC Pilot II BMC with 8MB DDR2 memory.

GURANTEED TECHNICAL PARTICULARS			- ANNEXURE-VII
	Ports	2 Serial, 6 USB (4+2), 1 VGA	
	Keyboard	USB Keyboard. Same make as that of Server.	
	Mouse	USB Optical Mouse. Same make as that of Server.	
	Backup Device	DAT 320 SAS Internal Tape Drive with Backup Software, Data Cartridge & Cleaning Catridge	
	Optical Drive	DVD ROM Drive	
	Power Supply	1+1 Redundant Power Supply or better	
	Bays	8 Hot Swap Hard Disk Bays	
	Housing	Tower Type	
	Management Software	OEM Server Management Software, System Health Monitoring, Remote Management on Windows	
	Certifications	Windows Server 2003/2008	
	Security	Power on Password	
1.8	Server for Talwara, Sundernagar & Nangal with the same Config as at 1.7 but with		
	CPU	1 x Intel Xeon Quad Core Processor E5620 (2.4 GHz or higher with 12MB Cache or higher & 5.86 GT/s or higher) or Higher	
	Memory	12 GB Registered DDR3 with ECC, 1066 MHz or higher Memory upgradable to 192 GB through 12 DDR3 DIMMs	
	Monitor	19" LCD Monitor, TCO'05 Certified, Make same as that of Server	
2	SYSTEM SOFTWARE		
2.1	WINDOWS 2008 ENTERPRISE SERVER 64 Bit Edition OLP WITH MEDIA (Incl Client Access License for 10 users)		
2.2	EXCHANGE SERVER 2010 ENTERPRISE OLP WITH MEDIA AND FOREFRONT THREAT MANAGEMENT GATEWAY 2010 with MEDIA Version		
2.3	EXCHANGE SERVER 2010 STANDARD OLP WITH MEDIA or Latest Version		
3	POWER CONDITIONING EQUIPMENT		
3.1	ON LINE UPS OF 5 KVA RATING		
	Power Rating	5KVA	
	Technology	DOUBLE CONVERSION On-line UPS using IGBT & having Isolation Transformer for total isolation from mains.	
	INPUT		
	Nominal Voltage Range	230 V - 25 % + 10% , Single Phase	
	Nominal frequency Range	50 Hz ± 5%	
	Power Factor	Not less than 0.95	
	Wave Form	Sinusoidal	
	OUTPUT		
	Continuous output Power	5 KVA/ 3.5 KW or higher	
	Voltage	230 V, Single Phase	
	Voltage Regulation	Not more than 2%	
	Frequency	50 Hz ± 0.5 Hz	
	Overload Capacity	110% for 10 minutes and 150% for 10 seconds120% for 30 secs	
	Wave Form	Sinusoidal	
	Load Power Factor	0.7 to 0.8	
	COMPUTER & COMMUNICATION INTERFACE Should be available & the software should be capable of monitoring UPS activity & to ensure orderly shutdown of the server in case of battery low voltage/discharged condition. Software required for Windows Server 2008. SNMP Based real time monitoring of all vital parameters such as Input voltage, Output Voltage, Output Load, Battery Voltage om Windows.		
	MEASURING INSTRUMENTS (ANALOG OR DIGITAL)		
	Input Voltage , Output Voltage & Frequency, Batt Voltage, Batt Current, Load		
	Current in Amps		
	Minimum 100 records of faults generated with date and time. FIFO method		
	PROTECTION		
	Over Load protection	MCBs both at Input & Output, Over Voltage protection	
	ADDITIONAL FEATURES		
	Static and Manual bye pass switch should be available		
	Caster wheels should be available for easy mobility of the UPS Unit of 5 KVA.		
	Cold start facility on full load should be available.		
	Noise level less than 45 db		
	INDICATIONS		
	Battery charging/status Indication		
	Bye-pass ON/OFF indication		
	Mains ON/OFF indication		
	Inverter ON/OFF		
	ALARM WITH INDICATIONS		

GURANTEED TECHNICAL PARTICULARS			- ANNEXURE-VII
	Overload, Fault, Battery Voltage Low/Discharged		
3.2	BATTERIES for S no 3.1 with 60 minutes backup		
	Type	Sealed Maintenance free.	
	Make	Panasonic/CSB/Yuasa/Exide	
	Back-up time	At least 60 minutes on full load	
	Operating Temperature Range	0-45 degree centigrade.	
	Rack	Rack for Batteries to be included (As per Purchaser/Space Requirement)	
4	NETWORKING COMPONENTS (ACTIVE)		
4.1	ROUTER with the following Specifications For Chandigarh		
	Architecture:		
	Should have support for Data, Voice, Video, Security and mobility services		
	Should be chassis based & modular architecture with multicore processor for scalability and should be a single box configuration for ease of management.		
	Should have integrated redundant power supply.		
	Should have embedded hardware based (IPSec and SSL) Encryption card accelerator		
	Should support complete Firewall, IPS features.		
	Should have 1Gb RAM should be upgradeable to 2Gb		
	Should have 256Mb flash and should be upgradeable to 4Gb		
	Should have four free slots for future expansion.		
	Should have integrated USB port to provide console, storage and secure token capabilities		
	Chassis should be 19" rack mountable type.		
	Should be supplied with necessary power cards, data cables, connectors, CD's, manuals, bracket accessories, wire managers and other appropriate accessories.		
	Performance:		
	Shall support high performance traffic forwarding upto 150Mbps with con-current services		
	Shall support variety of interfaces like V.35 Sync Serial (64Kbps, 2 Mbps), G.703, Ch-E1, 3G, E3 Interfaces for future uplink purposes, Ethernet Interfaces – 1Gbps, 10/100 Mbps, 802.3af, ISDN PRI, BRI, ATM, Digital/Analog dialup and remote access modules,		
	Shall support voice interface like FXS, FXO, E&M, T1/E1		
	Shall support DSL connectivity using ADSL, G.SHDSL		
	Should support integrated capability to host multiple application min. four like Unified Communication, Video Surveillance, Storage System, Network services, or customer application, etc using different processor, storage, memory to optimize and consolid		
	Should support other IP Services like GRE tunneling, ACLs, IPSEC VPNs, Firewalling, NAT services.		
	Shall support Voice traffic optimization with features like WRED, H-QoS, RSVP, performance routing and network based application routing		
	Should support four onboard voice and video capable digital signal processor		
	Should support per port PoE power monitoring		
	Should support management of power to module slots, to reduce energy consumption		
	High Availability		
	Shall support redundant Gigabit Ethernet connection to LAN		
	Shall have Redundant Power supply		
	Shall support fast reboot for minimum network downtime		
	Shall support Non-Stop forwarding for fast re-convergence of routing protocols		
	Shall support boot options like booting from TFTP server, Network node and Flash Memory		
	Shall support multiple storage of multiple images and configurations		
	Shall support link aggregation using LACP as per IEEE 802.3ad		
	Shall support VRRP or equivalent		
	Protocol Support		
	Should support Routing protocols like IS-IS, RIP v1 & RIP v2, OSPF ver2, OSPF on demand, BGP4, BGP Route-Reflector		
	Should support Multicast routing protocols IGMPv3, PIM-SM, PIM-SS, DVMRP, IPv4 to IPv6 Multicast, BFD, IEEE802.1ah, IEEE802.3ag		
	Should support DHCPv6, IPv6 QoS, RIPng, OSPFv3		
	Shall support MPLS, Layer2 and Layer3 VPN, L2TPv3		
	Support for Load balancing Protocol.		
	Support unequal cost link load sharing to better utilize the alternate paths		
	Configuration Roll Back to recover the mis-configured router to last good configuration		
	Encapsulation Support		
	Should support Encapsulation like Ethernet, 802.1q, PPP, MLPPP, FR, MLFR, HDLC, Serial (RS232, RS449, X.21, V.35, EIA530), PPPoE and ATM		
	Security Features:		
	Support Standard ACL, Extended ACL, ACL that can match arbitrary bits of packet bits of a packet at an arbitrary depth in the packet header and payload		

GURANTEED TECHNICAL PARTICULARS		- ANNEXURE-VII
	Support IPSEC Site-to-Site and Remote Access VPNs. Any Office to Any other office, dynamic establishment of VPNs so that the configuration & management of IPSEC VPNs becomes easier, Tunnel-less VPN connectivity and SSL VPN	
	Support IPSEC VPNs should be able to carry data, voice, video	
	Support Firewall feature set supporting Stateful, application-based filtering, per-user Authentication and Authorization, transparent firewall, Http and email inspection engine to detect port 80 misuses and email connectivity. IPS feature set with predefi	
	Support Content filtering	
	MD-5 route authentication for RIP, OSPF and BGP	
	Shall support multi-level of access	
	SNMPv3 authentication, SSHv2	
	AAA support using Radius.	
	CHAP authentication for P-to-P links	
	DoS prevention through TCP Intercept & DDoS protection	
	IP Access list to limit Telnet and SNMP access to router	
	Multiple privilege level authentications for console and telnet access through Local database or through an external AAA Server.	
	Time based & Dynamic ACLs for controlled forwarding based on time of day for offices	
	IEEE 802.1x support for MAC address authentication	
	Multi-media support:	
	Shall support Voice capabilities	
	i) Codec support for G.711 and G.729	
	ii) Should support the capability to integrate with PBXs using E1 connectivity.	
	Shall support H.323, SIP, MGCP	
	Shall support QSIG, E1 R2 and several CAS signaling	
	Should have in-built voice call processing in the event of WAN link failure to central call processing Engine capability for xx IP phones	
	Shall support bandwidth optimization features like Voice Activity Detection, Silence Suppression, Echo cancellation	
	Should not consume more than 14-15Kbps of bandwidth (including overheads) for a single voice over IP call	
	Debug, alarms & Diagnostics:	
	Support for monitoring of Traffic flows for Network planning and Security purposes	
	Trace-route, Ping and extended Ping	
	Should support extensive support for SLA monitoring for metrics like delay, latency, jitter, packet loss, RTP-Based VoIP traffic and should support the capability for measurement of the call setup time using H.323/SIP signaling protocol over IP network.	
	Shall support embedded event manager that enables automation of many network management tasks and directs the operation of router OS to increase availability, collect information, and notify external systems or personnel about critical events	
	Accounting:	
	Packet & Byte Counts	
	Start Time Stamp & End Time Stamps.	
	Network Time Protocol	
	Input & Output interface ports.	
	Type of service, TCP Flags & Protocol	
	Source & Destination IP addresses	
	Source & Destination TCP/UDP ports	
	Management	
	Shall have support for Web, GUI based management, CLI, Telnet and SNMPv3	
	Shall support Secure Shell for secure connectivity.	
	Embedded RMON support for four groups – history, statistics, alarms and events	
	Should have to support Out of band management through Console and an external modem for remote management.	
	Event and System logging: Event and system history logging functions shall be available. The Router shall generate system alarms on events. Facility to put selective logging of events onto a separate hardware here the analysis of log shall be available.	
	Pre-planned scheduled Reboot Facility: The Router shall support the preplanned timed reboot to upgrade their hardware to a new software feature and plan the rebooting as an off-peak time	
	Interface Requirements:	
	4 * Channelized E1 WAN interface Ports.	
	4 * E1 WAN interface Ports, On board 2 x GB Ethernet Port	
	4 * IP Phones with SCCP support to register with this router.	
	Miscellaneous WITH POWER CABLE, LAN CABLE(S), AUXILIARY AND CONSOLE CABLES, V.35 CABLE	
4.2	Router For Sundernagar & Nangal Computer Centres	
	Architecture:	
	Should have support for Data, Voice, Video, Security and mobility services.	

GURANTEED TECHNICAL PARTICULARS		- ANNEXURE-VII
	Should be chassis based & modular architecture with multicore processor for scalability and should be a single box configuration for ease of management.	
	Should support redundant power supply.	
	Should have embedded hardware based (IPSec and SSL) Encryption card accelerator	
	Should support complete Firewall, IPS features.	
	Should have 512Mb RAM should be upgradeable to 2Gb	
	Should have 256Mb flash and should be upgradeable to 4Gb	
	Should have two free slots for future expansion.	
	Should have integrated USB port to provide console, storage and secure token capabilities	
	Chassis should be 19" rack mountable type.	
	Should be supplied with necessary power cards, data cables, connectors, CD's, manuals, bracket accessories, wire managers and other appropriate accessories.	
	Performance:	
	Shall support high performance traffic forwarding upto 35Mbps with con-current services	
	Shall support variety of interfaces like V.35 Sync Serial (64Kbps, 2 Mbps), G.703, Ch-E1, 3G, E3 Interfaces for future uplink purposes, Ethernet Interfaces – 1Gbps, 10/100 Mbps, 802.3af, ISDN PRI, BRI, ATM, Digital/Analog dialup and remote access modules,	
	Shall support voice interface like FXS, FXO, E&M, T1/E1	
	Shall support DSL connectivity using ADSL, G.SHDSL	
	Should support integrated capability to host application like Unified Communication, Video Surveillance, Storage System, Network services, or customer application, etc using different processor, storage, memory to optimize and consolidate infrastructure	
	Should support other IP Services like GRE tunneling, ACLs, IPSEC VPNs, Firewalling, NAT services.	
	Shall support Voice traffic optimization with features like WRED, H-QoS, RSVP, performance routing and network based application routing	
	Should support two onboard voice and video capable digital signal processor	
	Should support per port PoE power monitoring	
	Should support management of power to module slots, to reduce energy consumption	
	High Availability	
	Shall support redundant Gigabit Ethernet connection to LAN	
	Shall support Redundant Power supply	
	Shall support fast reboot for minimum network downtime	
	Shall support Non-Stop forwarding for fast re-convergence of routing protocols	
	Shall support boot options like booting from TFTP server, Network node and Flash Memory	
	Shall support multiple storage of multiple images and configurations	
	Shall support link aggregation using LACP as per IEEE 802.3ad	
	Shall support VRRP or equivalent	
	Protocol Support	
	Should support Routing protocols like IS-IS, RIP v1 & RIP v2, OSPF ver2, OSPF on demand, BGP4, BGP Route-Reflector	
	Should support Multicast routing protocols IGMPv3, PIM-SM, PIM-SS, DVMRP, IPv4 to IPv6 Multicast, BFD, IEEE802.1ah, IEEE802.3ag	
	Should support DHCPv6, IPv6 QoS, RIPng, OSPFv3	
	Shall support MPLS, Layer2 and Layer3 VPN, L2TPv3	
	Support for Load balancing Protocol.	
	Support unequal cost link load sharing to better utilize the alternate paths	
	Configuration Roll Back to recover the mis-configured router to last good configuration	
	Encapsulation Support	
	Should support Encapsulation like Ethernet, 802.1q, PPP, MLPPP, FR, MLFR, HDLC, Serial (RS232, RS449, X.21, V.35, EIA530), PPPoE and ATM	
	Security Features:	
	Support Standard ACL, Extended ACL, ACL that can match arbitrary bits of packet bits of a packet at an arbitrary depth in the packet header and payload	
	Support IPSEC Site-to-Site and Remote Access VPNs. Any Office to Any other office, dynamic establishment of VPNs so that the configuration & management of IPSEC VPNs becomes easier, Tunnel-less VPN connectivity and SSL VPN	
	Support IPSEC VPNs should be able to carry data, voice, video	
	Support Firewall feature set supporting Stateful, application-based filtering, per-user Authentication and Authorization, transparent firewall, Http and email inspection engine to detect port 80 misuses and email connectivity. IPS feature set with predefi	
	Support Content filtering	
	MD-5 route authentication for RIP, OSPF and BGP	
	Shall support multi-level of access, SNMPv3 authentication, SSHv2	
	AAA support using Radius. CHAP authentication for P-to-P links	
	DoS prevention through TCP Intercept & DDoS protection	
	IP Access list to limit Telnet and SNMP access to router	

GURANTEED TECHNICAL PARTICULARS		- ANNEXURE-VII
	Multiple privilege level authentications for console and telnet access through Local database or through an external AAA Server.	
	Time based & Dynamic ACLs for controlled forwarding based on time of day for offices	
	IEEE 802.1x support for MAC address authentication	
	Multi-media support:	
	Shall support Voice capabilities	
	Should support the capability to integrate with PBXs using E1 connectivity.	
	Shall support H.323, SIP, MGCP	
	Shall support H.323, SIP, MGCP, Shall support QSIG, E1 R2 and several CAS signaling	
	Should have in-built voice call processing in the event of WAN link failure to central call processing Engine capability for xx IP Phones	
	Shall support bandwidth optimization features like Voice Activity Detection, Silence Suppression, Echo cancellation	
	Should not consume more than 14-15Kbps of bandwidth (including overheads) for a single voice over IP call	
	Debug, alarms & Diagnostics:	
	Support for monitoring of Traffic flows for Network planning and Security purposes	
	Trace-route, Ping and extended Ping	
	Should support extensive support for SLA monitoring for metrics like delay, latency, jitter, packet loss, RTP-Based VoIP traffic and should support the capability for measurement of the call setup time using H.323/SIP signaling protocol over IP network.	
	Shall support embedded event manager that enables automation of many network management tasks and directs the operation of router OS to increase availability, collect information, and notify external systems or personnel about critical events	
	Accounting:	
	Packet & Byte Counts	
	Start Time Stamp & End Time Stamps.	
	Network Time Protocol	
	Input & Output interface ports.	
	Type of service, TCP Flags & Protocol	
	Source & Destination IP addresses	
	Source & Destination TCP/UDP ports	
	Management	
	Shall have support for Web, GUI based management, CLI, Telnet and SNMPv3	
	Shall support Secure Shell for secure connectivity.	
	Embedded RMON support for four groups – history, statistics, alarms and events	
	Should have to support Out of band management through Console and an external modem for remote management.	
	Event and System logging: Event and system history logging functions shall be available. The Router shall generate system alarms on events. Facility to put selective logging of events onto a separate hardware here the analysis of log shall be available.	
	Pre-planned scheduled Reboot Facility: The Router shall support the preplanned timed reboot to upgrade their hardware to a new software feature and plan the rebooting as an off-peak time	
	Interface Requirements:	
	4 * E1 WAN interface Ports. 2 x GB Ethernet Port	
	2 * ISDN BRI ports with NT	
	2 * VoIP users with software and IP Phone.	
	Miscellaneous WITH POWER CABLE, LAN CABLE(S), AUXILIARY AND CONSOLE CABLES, V.35 CABLE	
4.3	Router (For Ganguwal & Slapper)	
	Architecture:	
	Should have support for Data, Voice, Video, Security and mobility services.	
	Should be chassis based & modular architecture with multicore processor for scalability and should be a single box configuration for ease of management.	
	Should have embedded hardware based (IPSec and SSL) Encryption card accelerator	
	Should support complete Firewall, IPS features.	
	Should have 512Mb RAM should be upgradeable to 2Gb	
	Should have 256Mb flash and should be upgradeable to 4Gb	
	Should have one free slot for future expansion.	
	Should have integrated USB port to provide console, storage and secure token capabilities	
	Chassis should be 19” rack mountable type.	
	Should be supplied with necessary power cards, data cables, connectors, CD’s, manuals, bracket accessories, wire managers and other appropriate accessories.	
	Performance:	
	Shall support high performance traffic forwarding upto 25Mbps with con-current services	

GURANTEED TECHNICAL PARTICULARS		- ANNEXURE-VII
	Shall support variety of interfaces like V.35 Sync Serial (64Kbps, 2 Mbps), G.703, Ch-E1, 3G, E3 Interfaces for future uplink purposes, Ethernet Interfaces – 1Gbps, 10/100 Mbps, 802.3af, ISDN PRI, BRI, ATM, Digital/Analog dialup and remote access modules,	
	Shall support voice interface like FXS, FXO, E&M, T1/E1	
	Shall support DSL connectivity using ADSL, G.SHDSL	
	Should support other IP Services like GRE tunneling, ACLs, IPSEC VPNs, Firewalling, NAT services.	
	Shall support Voice traffic optimization with features like WRED, H-QoS, RSVP, performance routing and network based application routing	
	Should support two onboard voice and video capable digital signal processor	
	Should support per port PoE power monitoring	
	Should support management of power to module slots, to reduce energy consumption	
	High Availability	
	Shall support redundant Gigabit Ethernet connection to LAN	
	Shall support Redundant Power supply	
	Shall support fast reboot for minimum network downtime	
	Shall support Non-Stop forwarding for fast re-convergence of routing protocols	
	Shall support boot options like booting from TFTP server, Network node and Flash Memory	
	Shall support multiple storage of multiple images and configurations	
	Shall support link aggregation using LACP as per IEEE 802.3ad	
	Shall support VRRP or equivalent	
	Protocol Support	
	Should support Routing protocols like IS-IS, RIP v1 & RIP v2, OSPF ver2, OSPF on demand, BGP4, BGP Route-Reflector	
	Should support Multicast routing protocols IGMPv3, PIM-SM, PIM-SS, DVMRP, IPv4 to IPv6 Multicast, BFD, IEEE802.1ah, IEEE802.3ag	
	Should support DHCPv6, IPv6 QoS, RIPng, OSPFv3	
	Shall support MPLS, Layer2 and Layer3 VPN, L2TPv3	
	Support for Load balancing Protocol.	
	Support unequal cost link load sharing to better utilize the alternate paths	
	Configuration Roll Back to recover the mis-configured router to last good configuration	
	Encapsulation Support Should support Encapsulation like Ethernet, 802.1q, PPP, MLPPP, FR, MLFR, HDLC, Serial (RS232, RS449, X.21, V.35, EIA530), PPPoE and ATM	
	Security Features:	
	Support Standard ACL, Extended ACL, ACL that can match arbitrary bits of packet bits of a packet at an arbitrary depth in the packet header and payload	
	Support IPSEC Site-to-Site and Remote Access VPNs. Any Office to Any other office, dynamic establishment of VPNs so that the configuration & management of IPSEC VPNs becomes easier, Tunnel-less VPN connectivity and SSL VPN	
	Support IPSEC VPNs should be able to carry data, voice, video	
	Support Firewall feature set supporting Stateful, application-based filtering, per-user Authentication and Authorization, transparent firewall, Http and email inspection engine to detect port 80 misuses and email connectivity. IPS feature set with predefi	
	Support Content filtering	
	MD-5 route authentication for RIP, OSPF and BGP	
	Shall support multi-level of access	
	SNMPv3 authentication, SSHv2	
	AAA support using Radius.	
	CHAP authentication for P-to-P links	
	DoS prevention through TCP Intercept & DDoS protection	
	IP Access list to limit Telnet and SNMP access to router	
	Multiple privilege level authentications for console and telnet access through Local database or through an external AAA Server.	
	Time based & Dynamic ACLs for controlled forwarding based on time of day for offices	
	IEEE 802.1x support for MAC address authentication	
	Multi-media support:	
	Shall support Voice capabilities	
	Codec support for G.711 and G.729	
	Should support the capability to integrate with PBXs using E1 connectivity.	
	Shall support H.323, SIP, MGCP	
	Shall support QSIG, E1 R2 and several CAS signaling	
	Should have in-built voice call processing in the event of WAN link failure to central call processing Engine capabilities for xx IP Phones	
	Shall support bandwidth optimization features like Voice Activity Detection, Silence Suppression, Echo cancellation	
	Should not consume more than 14-15Kbps of bandwidth (including overheads) for a single voice over IP call	
	Debug, alarms & Diagnostics:	

GURANTEED TECHNICAL PARTICULARS		- ANNEXURE-VII
	Support for monitoring of Traffic flows for Network planning and Security purposes	
	Trace-route, Ping and extended Ping	
	Should support extensive support for SLA monitoring for metrics like delay, latency, jitter, packet loss, RTP-Based VoIP traffic and should support the capability for measurement of the call setup time using H.323/SIP signaling protocol over IP network.	
	Shall support embedded event manager that enables automation of many network management tasks and directs the operation of router OS to increase availability, collect information, and notify external systems or personnel about critical events	
	Accounting:	Packet & Byte Counts
	Start Time Stamp & End Time Stamps.	
	Network Time Protocol	
	Input & Output interface ports.Type of service, TCP Flags & Protocol	
	Source & Destination IP addresses	
	Source & Destination TCP/UDP ports	
	Management	
	Shall have support for Web, GUI based management, CLI, Telnet and SNMPv3	
	Shall support Secure Shell for secure connectivity.	
	Embedded RMON support for four groups – history, statistics, alarms and events	
	Should have to support Out of band management through Console and an external modem for remote management.	
	Event and System logging: Event and system history logging functions shall be available. The Router shall generate system alarms on events. Facility to put selective logging of events onto a separate hardware here the analysis of log shall be available.	
	Pre-planned scheduled Reboot Facility: The Router shall support the preplanned timed reboot to upgrade their hardware to a new software feature and plan the rebooting as an off-peak time	
	Interface Requirements:	
	2 * E1 WAN interface Ports. 2 x GB Ethernet Port	
	2 * VoIP users with software and IP Phone.	
	Miscellaneous WITH POWER CABLE, LAN CABLE(S), AUXILIARY AND CONSOLE CABLES, V.35 CABLE	
4.4	LEASED LINE MODEMS (G.703 and V.35 pair)	
	FEATURE	G.SHDSL Modem
	Line Interface	2 Wire
	Line Coding	TC - PAM
	Line Rate	rate adaptive/fixed
	Impedence	135 ohms
	Standards	ITU-T 991.2, ETSI 101 524
	RANGE	2 WIRE 4.5 KM @ 2048Kb/s on 26 AWG
	Protection	As Per ITU K.21, UL 1950
	Line Connectors	RJ-45 and 5-clip terminal block
	DTE INTERFACE Type	Built in Ethernet interface for mangement/Lan extension
		X.21, 15-pin, D-type, female
		V.35, 34-pin, female / G.703/G.704 E1, RJ-45 or BNC
		IR-ETH/Q (Ethernet bridge with 4 port Switch)
		VLAN support), RJ-45
		IR-IP (IP router), RJ-45
	Data Rate	Depends on the DTE/line
		interface type and clock mode:
		2-wire: 64–2304 kbps
	E1 Coding	HDB3
	E1 Line Impedance	120Ω, balanced - 75Ω, unbalanced
	Control Port Interface	V.24/RS-232, DTE/DCE
	Format	7 or 8 bits; odd, even or no parity
	Baud Rate	9.6, 19.2, 38.4, 57.6, 115.2 kbps
	Connector	9-pin, D-type, female
	Management	SNMP ,Web ,Telnet ,Dial in & Dial outInband via dedicated time Slots
	Remote Config	Yes, Fully configurable
	GENERAL Timing	Internal, from internal oscillator
		External, from attached DTE
		Receive, from received signal
	Diagnostics	Loopbacks:
		Local analog loopback in compliance with ITU V.54
		Remote digital loopback in compliance with ITU V.54
		Remote Loop Back at SHDSL repeater
		System monitoring & diagnostics of both the units from one place through management.
		Local Port monitoring & diagnostics of both the units from one place

GURANTEED TECHNICAL PARTICULARS			- ANNEXURE-VII
	Statistics Collection	E1 with CRC-4 or T1 with ESF framing: per ITU G.706 E1 without CRC-4 or T1 with SF framing: bipolar violations (BPV) SHDSL performance	
	Alarm Relay	Alarms (real time) are relayed via a dedicated connector	
	Power	Same Power Supply for both AC & DC Power.	
		AC: 100 to 240 VAC (±10%), 50 to 60 Hz, 17 VA max	
		DC: -48 VDC (-36 to -72 VDC), 7W (4-wire), 5W (2-wire)	
	Performance monitoring	G.SHDSL statistics collection	
		E1 with CRC-4: per ITU G.706	
		E1 without CRC-4: BPV	
	Environment	Temperature: 0-50°C/32–122°F	
	Indicator	Power , Transmit Data, Sync Status, Loss of E1 Sync, Test etc	
4.5	LAN Extender		
		2-wire managed modem with full-duplex data rates of up to 5.7 Mbps over 2-wire	
		SHDSL bonding – for EFM: PAF according to IEEE802.3, for HDLC: M-Pair according to G.991.2	
		EFM Bonding Per IEEE802.3ah and ITU-T G.991.2 (for Ethernet only) Line code: 16 or 32 TC-PAM	
		4-port 10/100BaseT interface with integrated switch	
		simple installation & SNMP based management	
		Line Rate For EFM: 192 to 5696 kbps in steps of n x 64 kbps for each 2-wires For HDLC: 192 to 22784 kbps in steps of nx 64 where n = 89 for 2W and 178 for 4W	
		Frame Size : For EFM: 1580 bytes , For HDLC: 1530 bytes (while working with E1 or opposite repeaters)	
		Dual Bearer mode for E1 and Ethernet HDLC over 2-wire lines	
4.6	EDGE / DEPARTMENT/ BUILDING SWITCH		
	Physical Specification:	Should be rack mountable with 20-port 10/100/1000Mbps and 4 1000BaseT or SFP slots	
	General Specification:	Switch with 32 Gbps Switching Fabric	
		35.7 million packets per second forwarding rate on 64-byte packets	
		8000 MAC address supported	
		255 IGMP groups	
		Should support Redundant Power Supply	
	Layer-2 Features		
		IEEE 802.1Q VLAN encapsulation. Up to 255 VLANs per switch and upto 4000 VLAN IDs	
		Support for Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors	
		Centralized VLAN Management. VLANs created on the Core Switches should be propagated to all the other switches automatically, thus reducing the overhead of creating / modifying / deleting VLANs in all the switches in turn eliminating the configuration err	
		Spanning-tree PortFast for fast convergence	
		802.1d, 802.1p, 802.1Q, 802.1s, 802.1w, 802.1x, 802.1ab, 802.3ad,	
		Spanning-tree root guard to prevent other edge switches becoming the root bridge.	
		IGMP snooping v1, v2 and v3	
		Link Aggregation Protocol (LACP)	
		Support for Detection of Unidirectional Links and to disable them to avoid problems such as spanning-tree loops	
		Should be able to discover the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.	
		Support for Switch port auto recovery (err disable) to automatically re-enable a link that is disabled because of a network error.	
		Should support Multicast VLAN registration	
		Should support DHCP Server enabling a convenient deployment option for the assignment of IP addresses in networks that do not have without a dedicated DHCP server	
		Should support Local Proxy Address Resolution Protocol (ARP) works in conjunction with Private VLAN Edge to minimize broadcasts and maximize available bandwidth	
		Should support LLDP and LLDP-MED including client location information. Should exchange link and device information in multivendor networks.	
		Should support configuration rollback to replace current configuration with any saved configuration file. Should support link state tracking which provides layer2 redundancy in the network when used in conjunction with server teaming.	
		Support Configurable maximum transmission unit (MTU) of up to 9000 bytes, with a maximum Ethernet frame size of 9018 bytes (Jumbo frames) for bridging on Gigabit Ethernet ports	
		Support Autosensing speed on 10/100 ports, Autonegotiating half/full-duplex on all ports and Auto-MDIX	
	QoS Features		
		Per-port broadcast, multicast, and unicast storm control	
		Standard 802.1p CoS and DSCP classification using marking and reclassification on a per-packet basis by source and destination IP address, source and destination MAC address, or Layer 4 TCP or UDP port number.	

GURANTEED TECHNICAL PARTICULARS		- ANNEXURE-VII
	Control- and Data-plane QoS ACLs	
	No performance penalty for highly granular QoS functions	
	Four egress queues per port to enable differentiated management of up to four traffic types	
	Weighted tail drop (WTD) to provide congestion avoidance	
	Strict priority queuing mechanisms	
	Granular Rate Limiting function to guarantee bandwidth in increments as low as 1 Mbps	
	Rate limiting support based on source and destination IP address, source and destination MAC address, Layer 4 TCP and UDP information, or any combination of these fields, using QoS ACLs (IP ACLs or MAC ACLs), class maps, and policy maps.	
	Support for Asynchronous data flows upstream and downstream from the end station or on the uplink using ingress policing and egress shaping.	
	Up to 64 aggregate or individual policers for per Fast Ethernet or Gigabit Ethernet port.	
	Support for Automatic Quality of Service for easy configuration of QoS features for critical applications	
	Network security features	
	IEEE 802.1x to allow dynamic, port-based security, providing user authentication	
	Support for Admission Control features to improve the network's ability to automatically identify, prevent, and respond to security threats and also to enable the switches to collaborate with third-party solutions for security-policy compliance and enforc	
	Port-based ACLs (PACLs) for Layer 2 interfaces to allow application of security policies on individual switch ports.	
	Unicast MAC filtering to prevent the forwarding of any type of packet with a matching MAC address	
	Unknown unicast and multicast port blocking to allow tight control by filtering packets that the switch has not already learned how to forward	
	IGMP filtering provides multicast authentication by filtering out no subscribers and limits the number of concurrent multicast streams available per port. Support for SSHv2, SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions	
	The switch should support 2 session of Port Mirroring based on port basis / vlan basis to support intrusion prevention system deployment in different VLANs. Should support bidirectional data on mirror port which allows IDS to take action when an intruder	
	Should be able to allow administrators to remotely monitor ports in a Layer 2 switch network from any other switch in the same network	
	RADIUS authentication to enable centralized control of the switch and restrict unauthorized users from altering the configuration.	
	MAC address notification to allow administrators to be notified of users added to or removed from the network	
	DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addresses. This can be used to prevent attacks that attempt to poison the DHCP binding database, and to rate limit the amount of DHCP traffic that enters a switch port.	
	DHCP Interface Tracker (Option 82) to augment a host IP address request with the switch port ID	
	Port security to secure the access to an access or trunk port based on MAC address. After a specific timeframe, the aging feature should remove the MAC address from the switch to allow another device to connect to the same port.	
	Multilevel security on console access to prevent unauthorized users from altering the switch configuration	
	BPDU Guard feature, to shut down Spanning Tree Protocol PortFast-enabled interfaces when BPDUs are received to avoid accidental topology loops.	
	Spanning-Tree Root Guard (STRG) to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.	
	Support for upto 512 access control entries (ACEs).	
	Management	
	CLI support to provide a common user interface and command set with all routers and switches of the same vendor	
	Remote Monitoring (RMON) software agent to support four RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis.	
	Support for RMON groups through the use of a mirrored port, which permits traffic monitoring of a single port, a group of ports, or the entire switch from a single network analyzer or RMON probe	
	Time-domain reflectometer (TDR) to diagnose and resolve cabling problems on copper ports	
	Layer 2 traceroute to ease troubleshooting by identifying the physical path that a packet takes from source to destination	
	Domain Name System (DNS) to provide IP address resolution with user-defined device names	
	Trivial File Transfer Protocol (TFTP) to reduce the cost of administering software upgrades by downloading from a centralized location	
	Network Timing Protocol (NTP) to provide an accurate and consistent timestamp to all intranet switches	
	Support RMON I and II standards	

GURANTEED TECHNICAL PARTICULARS		- ANNEXURE-VII
	Support SNMPv1, SNMPv2c, and SNMPv3 and Telnet interface support delivers comprehensive in-band management, and a CLI-based management console provides detailed out-of-band management	
	Support IPV6 management	
	Regulatory Compliance	
	Switch shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards	
	Switch shall conform to EN 55022 ClassA/B or CISPR22 ClassA/B or CE Class A/B or FCC ClassA/B Standards	
	Following Modules for the Switches with the above configuration are required	
	1000BASE-SX Module Multi Mode - 4 nos.	
	1000BASE-LX Module Single Mode - 2 nos.	
4,7	Lumpsum Maintaineance Charges for existing CISCO ROUTER 2801 with 2 WAN Ports, 2 FXS ports etc. for 4 years	
5	ONE TIME CONFIGURATION/SETTINGS AS PER SCOPE MENTIONED in para-2 ‘Scope’ of the PO.	
6	LIASION CHARGES FOR LEASED LINES TO BE ARRANGED BY firm (From Nangal to Ganguwal,Sundernagar, Talwara & Sundernagar to Slapper, Ganguwal to Kotla)	
7	MAINTAINENCE CHARGES FOR LEASED LINES	
8	FACILITIES MANAGEMENT SEVICES As per Annexure-XI	
9.	NETWORKING COMPONENTS (PASSIVE)	
a)	UTP CABLE E-CAT 6 E, 500 Mhz(BOX 1000 FT)	
b)	JACK PANEL FOR 24 CONNECTS E-CAT6E	
c)	METAL RACKS 9U WALL MOUNT	
d)	METAL RACKS 42 U FLOOR	
e)	DUAL ENDED MOUNTING CORDS 7 ‘ E-CAT6E	
f)	DUAL ENDED MOUNTING CORDS 3 ‘ E-CAT6E	
g)	SURFACE MOUNT I/O BOX E-CAT6E	
h)	6 CORE OPTICAL FIBRE MULTIMODE CABLE (ARMOURED-OUTDOOR) OM3 50/125 MICROMETER PER METER	
i)	6 CORE OPTICAL FIBRE SINGLEMODE CABLE (ARMOURED-OUTDOOR) 9/125 MICROMETER PER METER	
j)	LIGHT INTERFACE UNIT (LIU) 24 PORT	
k)	LIGHT INTERFACE UNIT (LIU) 12 PORT	
l)	SC COUPLER FOR COUPLING	
m)	SC CONNECTION PANEL	
n)	SC MM CONNECTORS	
o)	CLAMPS	
p)	BLANK PANEL	
q)	LC-SC Patch Cords duplex 3M/10Ft Multimode	
r)	SC CONNECTOR SM	
s)	SC COUPLER FOR COUPLING SM	
t)	LC-SC PATCH CORD 3M/10FT SM	
u)	BUFFER TUBBING KIT	
v)	AVAYA/EQ. CERTIFICATION PER NODE (UTP)	
w)	FIBRE CERTIFICATION PER CORE	
	JOB DESCRIPTION/LABOUR WORK	
a)	LIU FIXING	
b)	CONNECTRIZATION OF FIBRE	
c)	JACK PANEL FIXING	
d)	RACK PANEL FIXING wall mount	
e)	FIBRE OPTICS CABLE LAYING(UNDERGROUND) / CRIMPING/ CONDUITING CHARGES INCL GI PIPE (GRADE-B)/m	
f)	FIBRE OPTICS CABLE LAYING(UNDER THE ROAD) / CRIMPING/ CONDUITING CHARGES INCL GI PIPE (GRADE-B) /m	
g)	FIBRE OPTICS CABLE LAYING(OVERHEAD) / CRIMPING/ CONDUITING CHARGES /m	
h)	UTP CABLE LAYING , CRIMPING / CONDUITING CHARGES INCLUDING PVC PIPE. FITTING ETC./m	
i)	UTP CABLE LAYING (UNDER GROUND), CRIMPING/ CONDUITING CHARGES INCLUDING GI PIPE (GRADE-B), FITTINGS ETC./m	
j)	UTP CABLE LAYING (UNDER THE ROAD), CRIMPING/ CONDUITING CHARGES INCLUDING GI PIPE (GRADE-B), FITTINGS ETC./m	
k)	FIBER SPLICING Per Core	
	SPECIFICATIONS FOR PASSIVE NETWORKING COMPONENTS	
	OPTICAL FIBRE CABLE	
	Cable Type	6-core, Single Mode, Armored, Loose-tube, Gel filled
	Fiber Type	Single Mode, 9 / 125, 250 micron primary coated buffers
	No. of cores	6
	Operating Temperature	-40 Degree C to +60 Degree C

GURANTEED TECHNICAL PARTICULARS		- ANNEXURE-VII
	Cable Type	6-core, Multimode, OM3, Armored, loose-tube, Gel Filled
	Fiber type	50 / 125, OM3, 250 micron primary coated buffers
	10 / 100 Ethernet	2000m
	155 Mbps ATM	2000m
	1000 Base SX	900m
	1000 Base Lx	550m

DETAILS OF EQUIPMENT FOR BUY BACK

S.No.	Description		Quantity (In Nos)	Condition
1	ROUTER 3640	CISCO ROUTER 3640 ALONG WITH 8 Serial PORTS	1	Working
2	SWITCH	SWITCH- Cisco Ws-C1912 EN- Enterprises Ed.	1	Working
3	VSAT	SCPC VSAT 1.8M (Incl. Installation & RF Cable Vsat to Antenna)	1	Working
4	HCL SERVERS	P-3, 1 Ghz, Mem. 256 MB, 10/100MBPS Integrated dual channel, 1x 1.44 MB FDD, 1x 52x CDROM. 3x20 GB SCSI HDD, 24 GB DAT Drive, Keyboard, Mouse, 14" Color Monitor etc	3	Working
5	Modem	MODEM EXTERNAL, Multitech make 56 KBPS	10	Working
6	UPS 5KVA	UPS 5 KVA ALONG WITH BATTERIES	4	Working
7	ESPL SM 32 System	ESPL SM 32 Server - Processor: 16 Bit CPU- 1No, 2 MB RAM, H D D 86 MB each with one Controller-2 No., Flopy Disk Drive : 5 ½"- 2No, and along with Softwares and Manuals etc including Upgradation of SM-32 with MC 68020, 1 MB RAM, FPP (MC 68881) - 2 Nos, CRT Terminals - 2nos	1	Not Working
8	Magnetic Tape	Magnetic Tape Drive: 1600 bpi -	1	Not Working
9	Terminal	Terminals,: Standard 12" VDU's with Key boards	6	Not Working
10	Data Entry M/c	Off Line Data Entry M/c HCL 7600	1	Not Working
11	Voltage Stabalizer	Servo Controlled Voltage Regulator (5KVA)	2	Not Working
12	Isolation Transformer (5 KVA)		1	Not Working
13	Wipro Server - LANDMARK E2 MODEL 200	Wipro Server -LANDMARK E2 MODEL 200 with Intel 80486 Dx2, 66 MHz CPU, 16 MB RAM, 256 KB CACHE, 2x 425 MB SCSI Disk Drive, 1x 1.2 MB FDD, 14" VGA Monochrome Monitor with 101 Keys Key Board etc	1	Not Working
14	Terminal Connection Device	EISA Terminal Processor-32 Parallel Port, 32 Bit SCSI Controller with 4 MB RAM TMC860 SCSI CNTRL. for LME CTD, 1x1.44 MB FDD	1	Not Working
15	Terminals	VT-100 Terminals with Key Board	5	Not Working
16	SCSI CTD	150 MB SCSI Cartridge Tape Drive	1	Not Working
17	Key Board	Key Board 1010 C Bilingual Riticomp	1	Not Working
18	GIST Card	GIST Card and Software for Devnagari and English	1	Not Working
19	Wipro Server- Fusion 910/ Pentium	Wipro Server- Fusion 910/ Pentium, CPU 90MHz, 256 KB Cach, 16MB RAM, 1.44 MB FDD, 14" SVGA Monitor, 101 KBd., PCI Bus, EISA bus, RTC,32 MB Ram ILO 16 MB, PCISCSI-2 Contoller, 1.2 MB FDD, ISA SCSI-2 CNTR, EISA terminal Processor Card 32(16-S), Add Parallel Port,MS Mouse, 525 MB SCI CTD, 2 x1000 MB HDD , 2 Logitech Mouse	1	Not Working
20	Terminal	CRT Terminal CT 2220	1	Not Working
21	Modem	Modem(300-BPSModem)	2 Nos	Not Working
22	Computer Screen (Antiglare Screen)		2 Nos.	Not Working
23	Printer Sharer Auto 2x1 with 2 nos cable		1 Nos	Not Working
24	ESPL System	ESPL Server along With Manual & Software	1	Not Working
25	Terminal	Terminal 1-No HCL Make,	1	Not Working
26	Terminal	Terminal ESPL Make	2	Not Working
27	Terminal	Terminal Wipro Make	4	Not Working
28	Mail Server	MS Mail Server for Win 95	1	
29	Hub	D-Link UTP Hub	3	Working
30	Hub	Supper Stack Hub12	3	Working
31	Mail Remote	Mail Remote 3.2 for windows	9	
32	Anti Virus	Mcafee TVD Mutiuser Box AV S/W 5 user pack for desktop & Server Ver. 4.5	5	
33	Software	MS Back office Server 4.5, WITH 20 Client Licenses	1	Working
34	Software	e- Network Firewall	1	Working
35	Unix Ware OS	UNIXWARE +LICENSE +SCO DEV KIT+ MEDIA KIT FOR UNIWARE	2	Working
36	Oracle S/w	ORACLE 8I+ADDL.10 USERS LICENSE	2	Working
37	Oracle S/w	ORACLE 8I UPGRADEABLE FROM ORACLE 8.0 ENTPRISES ON UNIXWARE	1	Working
38	Oracle S/w	ORACLE 8I UPGRADEABLE FROM ORACLE 8.0 WORKGROUP SERV. ON UNIX	1	Working
39	Software	DEVOLPER & DESIGNER 2000 OR LATEST ON WIN 98/2000	1	Working
40	Software	MS SMALL BACK OFFICE SERVER LATESTS REL (10 USER)	1	Working
41	Software	WINIX V.4 O.S.	1	Not Working
42	Oracle S/w	ORACLE 7.0 Engine, TPO, SQL & Report Writer, SQL Forms/ Menus, SQL Plus, Pro-C	1	Not Working
43	unixware	Unixware Apl. Server1.1 with manuals, CTD and Floppies	1	Not Working
44	unixware	Unixware S/W Development Kit & personel utilities with one CTD	1	Not Working

TERMS AND CONDITIONS OF FACILITIES MANAGEMENT SERVICES CONTRACT

The important terms and conditions for the Facilities Management Services contract shall be as under:

- 1. The FMC charges will be paid on quarterly basis.
- 2. The supplier / service provider shall ensure 97% uptime for the critical infrastructure during the Facilities Management Contract period.
- 3. The uptime shall be calculated on monthly basis.
- 4. In case the monthly uptime falls below 97% (for Severity Level 1 - i.e. Monthly down time exceeds 3%) & 95% for equipment (Severity level 2 & 3 - i.e. Monthly down time exceeds 5%) a deduction in monthly FM charges as given below will be made.

%age Downtime	%age deduction on Monthly Charges
Upto 10	20
Above 10 & upto 20	35
Above 20 & upto 30	50
Above 30	100

- 5. Service Methodology & Metrics
 - Calls will be classified based on the criticality and their nature. Total service deliverables will be measured based on a clearly charted metrics. Each service request will be classified into one of the 3 priority levels for response and resolution time adherence:
 - ✓ Severity Level 1 – A problem which affects BBMB’s business objective / critical Infrastructure, pre-defined important users (max. 15) in their immediate working, like problem in Servers, Routers and Central Switches.
 - ✓ Severity Level 2 – A problem, which affects an individual user or user system like problem in individual user’s desktops or office application etc.
 - ✓ Severity Level 3 – Problems falling in the category other then the two described above like change in configuration etc.

Service Metrics

Service level Metrics for various activities should be as given below:

Service Category	Response Time	Resolution Time
Severity Level 1	95% in < 2 Hours For equipment at Chandigarh & < 8 Hours for outside stations 100% in < 16 Hours	95% in < 8 Hours For equipment at Chandigarh & < 16 Hours for outside stations 100% in < 24 Hours
Severity Level 2	100% < 8 Hours for equipment at Chandigarh & < 16 Hours for outside locations	100% in 24 Hrs
Severity Level 3	100% < 24 Hours	100 % in 72 Hrs

Calls that require escalation to vendors like hardware calls, development / QA / testing tools or application related calls etc. will not be considered for the service level calculations. An uptime of 97% for the critical infrastructure should be assured under FM Services.

- 5. The service provider shall provide experienced qualified resident service engineers (Two Nos) for FMS at the BBMB Data Centre. The engineers will be deployed during the working hours of BBMB (9.00 AM – 5 PM) on all working days (Monday to Friday). The support in odd hours or on holidays will be extended subject to requirement of BBMB.
- 6. The downtime calculations shall be based on the 24x7 for equipment under severity level 1 while for others it shall be based on working hours of BBMB (9.00 AM – 5 PM) on all working days (Monday to Friday). However, the support on holidays will be provided subject to requirement of BBMB.

DETAILED TECHNICAL SPECIFICATIONS FOR THE SCOPE OF WORK FOR FACILITIES MANAGEMENT SERVICES

1 Objective

The firm shall provide Facility Management Services (FMS) to the entire BBMB IT Infrastructure at various locations, geographically spread in North India. The service provider will be responsible to carry out comprehensive FMS of entire IT infrastructure comprising Local Area Networks / Wide area networks, Networking equipments, Servers, PCs, Printers & other peripherals, UPS etc.

2 Facility Management Services (FMS)

2.1 Desktop Management

The service provider will ensure that the problems faced by the desktop users are resolved within the shortest possible time. The service provider will ensure that the new versions of desktop applications are loaded with the relevant updates and patches necessary to get the performance required to meet the end users' requirement.

Activity Description

- 2.1.1 Installation and maintenance of Operating System, Office Automation software and other application software etc. on client PCs.
- 2.1.2 Provide services such as relocation of PCs at the same station, adding or removing accessories, devices & peripherals.
- 2.1.3 Maintaining complete record of new machines installed, movement of machines, changes and configuration of machines.
- 2.1.4 Performing any Install, Move, Add or Change (IMAC) at client level.
- 2.1.5 Resolution of all printing problems of users.
- 2.1.6 Configuration/ reconfiguration of client machines to ensure maximum network connectivity.
- 2.1.7 Client configuration of mail clients.
- 2.1.8 Installing, reloading, reconfiguring of any desktop / office automation software, e-mail clients, browsers, applications, clients of any application etc., as and when required.
- 2.1.9 In case of hard disk failure, the service provider shall make all attempts possible to retrieve the data & transfer to the new disk.

2.2 Network Management

Network Management Services for IT Infrastructure shall be provided by the service provider, which shall include the following for optimum utilization of the Networks and ensuring the availability of applications.

Activity Description

- 2.2.1 Daily monitoring of LAN / WAN, troubleshooting and reporting the status to BBMB's Computer Centre.
- 2.2.2 Configuration/ Reconfiguration of Routers, Modems, switches, Nodes, servers etc. for network connectivity, as and when required.
- 2.2.3 Maintain an updated inventory/ asset list of complete IT network infrastructure.
- 2.2.4 Re-establishing the network connectivity and application availability after any hardware/ software failure.
- 2.2.5 Maintain an all-time updated document for LAN & WAN network diagrams with relevant details.
- 2.2.6 Provide services for leased line & ISDN line links, devices augmentation, deletion, relocation, connection, disconnection etc., as and when required.
- 2.2.7 Protocol configuration on any new router/ switch as per existing routing protocol.
- 2.2.8 Maintain & update IP address list and optimum management of IP addresses.
- 2.2.9 The service provider shall make effort to ensure the availability of WAN links by rectification of faults through concerned agency.
- 2.2.10 Data traffic monitoring and management for optimum data speed for each application/ service and performance of the Network and record keeping.
- 2.2.11 Overall performance monitoring regularly and tuning of the Network, as and when required.
- 2.2.12 Limit broadcasts, monitoring the response time of online applications & taking corrective actions.
- 2.2.13 Network security.

2.3 Server Management

Management Services for various Servers shall be provided by the service provider and shall include the following along with all other actions, which are necessary for optimum utilization of the Servers and ensure availability of applications.

Activity Description

- 2.3.1 Daily monitoring of Servers and troubleshooting. Resolving server operations problems, like system 'hang', hard disk crash etc. and keeping a log of the same.
- 2.3.2 Re-installation of OS and other software, as & when required.
- 2.3.3 Package management - Installation of packages, upgrades and patches of OS and other software, as and when provided by BBMB or OEM, Un-installation and maintenance of packages, as and when required
- 2.3.4 Downloading of upgrades, bug fixes, updates, and patches of OS and other applications running on servers from OEM web sites and installation of the same. Keeping a log for the same.
- 2.3.5 Connectivity management - Creation of routes on servers to enable organization-wide access, TCP/ IP management, Network troubleshooting
- 2.3.6 Creating/ modifying/ deleting users and groups, Adding, Removing users, Maintaining password, shadow & group files, Creating Home directories
- 2.3.7 Overall performance monitoring and generation of logs every month.
- 2.3.8 Monitoring of CPU utilization, main memory, disk space usage, swap utilization, average load, system's network traffic etc. vis-à-vis thresholds using basic Server Management tools available on servers else, the Service Provider may arrange tools for the same.
- 2.3.9 Performing quarterly system performance tuning for optimum performance – changing the system configuration parameters and re-organizing the disk space etc.
- 2.3.10 Capacity planning on the servers.
- 2.3.11 Ensuring confidentiality of operations/services data/information.
- 2.3.12 Support for installation & smooth running of various applications running on these servers.
- 2.3.13 Hardware monitoring & other warnings.

2.4 Back-up & Restoration Services

- 2.4.1 Perform backup operations for the servers, as per defined backup strategy/ schedule, as specified by BBMB.
- 2.4.2 Ensuring secure storage and handling of media to prevent data loss.
- 2.4.3 Conduct restoration drills with sample backed up data on a quarterly basis to confirm data integrity.
- 2.4.4 Maintain log sheets of backups taken.

2.5 Asset Management

It will cover all the IT equipment at FM location of BBMB – Servers, Desktops, notebooks, Printers, networking equipment, scanners, UPS, and any other IT equipment/ device & Software assets, intimated to the vendor's representative.

Each hardware asset should be assigned a unique asset ID and visible mark/tag put on each asset. The asset ID scheme would be uniform throughout the organization and as per ID numbering scheme prepared by Service Provider and approved by BBMB.

Activity Description

- 2.5.1 Create hardware asset database by recording information like configuration details, serial number, asset code, warranty details etc.
- 2.5.2 Record all installation of new machines, movement within site, changes in configuration of machines.
- 2.5.3 Create Software inventory with information such as License, Version Numbers and Registration Details thru Microsoft SMS.
- 2.5.4 Software License Management
- 2.5.5 Notifying BBMB on licensing contract renewal.
- 2.5.6 Create and maintain an updated list of users, assets assigned, e-mail addresses, mobile numbers, contact phone nos. of all users.

2.6 Mail Management (Exchange 2010)

The email system is very critical in BBMB. The service provider will ensure that the mail servers are up and running all the time and the communication is kept active and checked on priority.

Activity Description

- 2.6.1 Management of the Mail Servers
- 2.6.2 Install, configure and test client email software on all desktops and laptops.
- 2.6.3 Troubleshoot and rectify all email-related problems reported.
- 2.6.4 Assist the BBMB administrator for Creation, modification and deletion of email login accounts as and when required.
- 2.6.5 Schedule emails data backups according to defined plan. Also verify the healthiness of the data on backup media regularly.

2.7 Virus Management

The service provider has to ensure that entire BBMB networks, servers & PCs remain virus/ worm free at all times.

Activity Description

- 2.7.1 The Internet gateways and other access points should be protected from viruses.
- 2.7.2 The PCs should be protected against the viruses/ worms. Diagnosing and rectifying any virus problems. Escalating the problem cases to OEM of anti-virus software and BBMB and resolving the problem to logical end.
- 2.7.3 The Servers should be protected and safe-guarded against viruses/ worms, unauthorized users, spamming etc.
- 2.7.4 The Service Provider will ensure that the anti-virus servers are regularly updated with patches.
- 2.7.5 The latest anti-virus updates/ patches shall be required to be made available to all desktops and online Antivirus update facility to the desktop shall have to be monitored and ensured.
- 2.7.6 Any other requirements as per Security guidelines/framework

3 Network Management System Tool

3.1 Network & Fault Management

The vendor shall have to provide /arrange necessary hardware/software required, if any, for the Network Management System Tool services.

3.1.1 Management

- 3.1.1.1 It shall manage Routers, Switches, Servers, Desktops & any SNMP Manageable devices
- 3.1.1.2 It shall possible to manage Non-SNMP devices at least for availability perspective
- 3.1.1.3 It shall support at least SNMP V1 and SNMP V2
- 3.1.1.4 It shall monitor any TCP/IP Port for the availability and response time
- 3.1.1.5 It shall have capability to monitor and manage standard applications like Active Directory, SQL and IIS
- 3.1.1.6 It shall provide Web Based interface for the users to operate
- 3.1.1.7 For Desktop and Servers it shall give the Software and Hardware details of the system
- 3.1.1.8 The system must be capable of automatically discovering manageable elements connected to the network and mapping the connectivity between elements, including port-level connectivity.

3.1.2 Configuration

- 3.1.2.1 Administrator should be able to create new users and user profiles
- 3.1.2.2 Administrator should be able to configure polling interval for different category of devices like Routers, Switches, Desktops, Servers and Non-SNMP Devices
- 3.1.2.3 User should be able to change their password via the same web interface of the management system

3.1.3 Role Based Access

- 3.1.3.1 It shall be possible to allocate specific managed elements (like Routers, Switches, Servers etc) to specific users and he is allowed to manage only the allotted managed elements.
- 3.1.3.2 It shall provide automatic filtering of Alarms and Topology view of the allocated managed elements for that user.
- 3.1.3.3 Should manage all the elements
- 3.1.3.4 It shall have unlimited user access to management system via web browser

3.1.4 Discovery

- 3.1.4.1 It Shall give flexibility to specify the Discovery of the Elements by Subnet Wise, Range of IP Address, Single IP Address.
- 3.1.4.2 It shall be possible to load the elements information from a file
- 3.1.4.3 It shall automatically categorize the discovered elements in to different category like Routers, Switches, Servers, Desktops and Non-SNMP devices.
- 3.1.4.4 It shall discover the inventory of the element like interfaces, CPU, Memory, Disk and OS

3.1.5 Dashboard

- 3.1.5.1 It shall have dashboard to give quick view of the network by summarizing the overall network health like total number of devices in normal, warning, informational and critical conditions
- 3.1.5.2 Dashboard shall have facility to place critical / interested device from allotted elements in dashboard to get quick status of these elements.

3.1.6 Fault Management

- 3.1.6.1 It shall provide fault management for the managed devices
- 3.1.6.2 It shall have functionality to process the events from managed elements and display in the event console
- 3.1.6.3 It shall be able to detect the management elements outage in real-time if the managed element becomes dead
- 3.1.6.4 It shall provide both Alarm Console and Topology Monitor functionality and shall have real-time status

- 3.1.6.5 It shall be possible to send an email alert to the specific email ID for specific single device
- 3.1.6.6 It shall be possible run custom action scripts (as desired) based on specific SNMP event of the specific device
- 3.1.6.7 It shall have built in correlation functionalities to create /clear alarm

3.1.7 Alarms

- 3.1.7.1 There shall be alarm console to view the real-time events.
- 3.1.7.2 It shall have meaningful message to understand the network issue by correlating the element related information's like Managed device, interface name, interface description/alias and event time
- 3.1.7.3 It shall be possible to configure specific severity to specific type of event
- 3.1.7.4 It shall have provision to view specific alarm types like Critical, Warning, Information and Normal
- 3.1.7.5 It shall be possible to configure similar alarm and able to show only one alarm instead of displaying multiple such alarms
- 3.1.7.6 It shall indicate the alarms in different color based on severity
- 3.1.7.7 It shall be possible to compile the alarm messages for any given SNMP event
- 3.1.7.8 It shall possible to configure events that needs to dropped to avoid unwanted events in the event console
- 3.1.7.9 It shall provide functionality to archive the alarms to database without displaying in the alarm console.
- 3.1.7.10 It shall be possible to search the alarm, minimum based on Managed Device IP/Name, Message text and event time
- 3.1.7.11 It shall be possible to view alarm of one specific interface from the topology view itself.
- 3.1.7.12 Alarm must comply to ITU definition of X.733 field formats

3.1.8 Topology

- 3.1.8.1 It shall automatically draw the logical network topology in graphical view showing the exact manner the managed elements are connected
- 3.1.8.2 It shall provide both Layer 3 and Layer 2 network topology
- 3.1.8.3 It shall give the topology of the allotted managed elements only for that user
- 3.1.8.4 It shall have different icons for different network devices like Routers, Switches, Desktops and Servers etc
- 3.1.8.5 It shall have different icons for different network vendors like CISCO, Nortel etc
- 3.1.8.6 It shall support containers where in group of devices can be placed inside the containers and drilling down the containers shall give topology diagram of these specific nodes that are inside the containers
- 3.1.8.7 It shall be possible to view the interfaces of the managed elements like routers, switches etc from the topology it self with real-time status of each interfaces
- 3.1.8.8 It shall indicate the link status change in different colors like green in normal and red in down condition
- 3.1.8.9 It shall be possible to place the managed elements in any specific location of the screed/background by dragging it.
- 3.1.8.10 It should be possible to save the positioning of the managed elements in the topology view

3.1.9 Performance & Reporting

- 3.1.9.1 It shall provide performance management for the managed devices
 - 3.1.9.2 It shall give Uptime for devices/systems and interfaces with in the devices
 - 3.1.9.3 It shall give resource utilization for system resource like CPU, Memory and Disk
 - 3.1.9.4 It shall give resource utilization for network device resource like Interface traffic, CPU and Memory
 - 3.1.9.5 It shall be possible run a report on daily, monthly, yearly and custom period on the fly
 - 3.1.9.6 It shall provide reports both in Tabular and graphical chart form
 - 3.1.9.7 It shall be possible to save the report in PDF format
 - 3.1.9.8 It shall be possible to configure upper and lower threshold at least for Interface traffic, CPU, Memory, Disk Utilization and Uptime
 - 3.1.9.9 It shall be possible to Schedule a report Daily, Monthly, yearly and Custom period and the Scheduled report shall be sent automatically to specific email ID
 - 3.1.9.10 It shall be possible to configure business hour for any single device separately and Uptime/SLA report shall exclude the non-operational hours for reporting
 - 3.1.9.11 Reports should be available in web interface
 - 3.1.9.12 It shall give various asset reports
- The frequency of report generation & submission shall be decided mutually.

3.1.10 Platform Support

- 3.1.10.1 It shall run at Windows 2008 Server OS

3.1.11 Integration

- 3.1.11.1 It shall be possible to integrate device management tools from device vendors like Cisco, Nortel, D-link etc.
- 3.1.11.2 It shall allow you to launch the specific web-based device management tools from central NMS console itself.
- 3.1.11.3 It shall be possible to integrate any other element management system traps/events if required

4 **Security Management**

The Service Provider would be responsible for managing a secured environment. He will be responsible for security monitoring of the network.

- 4.1 **Manage Security** – Execute recurring security processes, such as administration of identities, management of standard and policies and operation of a centralized repository of security information. Service provider will be responsible for :
 - 4.1.1 Defining security policy **for firewall & periodic review of the firewall** configuration
 - 4.1.2 Implement access rules for departments to be connected to BBMB.
 - 4.1.3 Log Generation, analysis & reports for firewall system.
 - 4.1.4 Reports for the firewall shall be submitted on monthly basis. The format will be finalized after discussions.
 - 4.1.5 Resolve Security issues by maintaining an up-to-date environment, including patching vulnerable system and applying incremental additions and security updates to existing system.
 - 4.1.6 Provide the **Content filtering services thru Web Sense Content filtering software** & providing various reports like web sites visited users wise, top downloads user wise, protocol based usage of users etc. Report of Violation by users as per the BBMB policy.
 - 4.1.7 Adherence to all security guidelines issued by BBMB.

- 4.2 **Incident Response** – Any security incident need to be met by an appropriate security response by service provider. An appropriate response mechanism should be put to take care of any security incident .The Service provider should detect threat, prevent vulnerability exposure, stabilize incident, repair vulnerabilities, investigate incident, report incident & recover operations.

5 **Service Level Agreement**

- 5.1 BBMB IT Infrastructure covered in the scope of these services. **97% uptime** shall be assured for critical infrastructure under FM Services while 95% for rest of the equipment. The working hours of BBMB offices are from 9:00 AM to 5:00 PM, 5 days a week. All the uptime calculations shall be based on the 8-hour schedule.

5.2 Service Methodology & Metrics

Calls will be classified based on the criticality and their nature. Total service deliverables will be measured based on a clearly charted metrics. Each service request will be classified into one of the 3 priority levels for response and resolution time adherence:

- ✓ Severity Level 1 – A problem which affects BBMB’s business objective / critical Infrastructure, pre-defined important users (max. 15) in their immediate working, like problem in Servers, Routers and Central Switches.
- ✓ Severity Level 2 – A problem, which affects an individual user or user system like problem in individual user’s desktops or office application etc.
- ✓ Severity Level 3 – Problems falling in the category other then the two described above like change in configuration process etc.

Service Metrics

Service level Metrics for various activities should be as given below:

Service Category	Response Time	Resolution Time
Severity Level 1	95% in < 2 Hours For equipment at Chandigarh & < 8 Hours for outside stations 100% in < 16 Hours	95% in < 8 Hours For equipment at Chandigarh & < 16 Hours for outside stations 100% in < 24 Hours
Severity Level 2	100% < 8 Hours for equipment at Chandigarh & < 16 Hours for outside locations	100% in < 24 Hrs
Severity Level 3	100% < 24 Hours	100 % in < 72 Hrs

Calls that require escalation to vendors like hardware calls, development / QA / testing tools or application related calls etc. will not be considered for the service level calculations.

An uptime of 97% as per Annexure-IX for the critical infrastructure should be assured under FM Services.

6 Service Engineers

The service provider shall provide experienced qualified resident service engineers (Two Nos) for FMS at the BBMB Data Centre. The engineers will be deployed during the working hours of BBMB (9.00 AM – 5 PM) on all working days (Monday to Friday). The support in odd hours or on holidays will be extended subject to requirement of BBMB.

Support at other locations where there are no resident engineers will be coordinated from Chandigarh Data Centre and/or may have to visit the location, if required. In case, additional manpower is required for maintaining the uptime in any emergency, the same shall be made available.

7 Facilities to be provided by BBMB

The BBMB shall provide the following facilities to the resident service engineers during the FM assignment at site:

- a) Communication Facilities like Intercoms with '0' dialing facility (calls restricted to 500 calls per month on one Intercom), e-mail, Internet etc and office accommodation with 1 PC, Printer.
- b) The Resident Engineers shall have to make their residential arrangement at Chandigarh of their own. However suitable accommodation on chargeable basis as per the rates applicable to BBMB Officers (At Present Rs. 15/- Per day for stay only) etc. shall be provided to resident engineers at out station locations for carrying out the assignment.
- c) The documents, data, facilities and access to areas required for performance of duties by resident engineers shall be arranged/ provided.
- d) In case of outstation visit by the service engineers, the TA admissible to BBMB Officer shall be paid on actual.

In addition, the vendor shall provide Laptop Computer, Mobile phones & any other equipment & software/tools required for performance of FM services.

DISTRIBUTION OF EQUIPMENT						Annexure - XI		
S.No.	DESCRIPTION OF EQUIPMENT AS PER SECTION-4	CHANDIGARH	NANGAL	SUNDERNAGAR	TALWARA	PANIPAT	JAMALPUR	Total
		NUMBER OF						
1	Server at S.No. 1.1(a) of Sec-3	2						2
2	Server at S.No. 1.1(b) of Sec-3	1						1
3	Server at S.No. 1.1(c) of Sec-3	2						2
4	Cabinet/Chassis for Blade Servers	1						1
5	Backup Solution for Servers	1						1
6	Rack 42 U	1						1
7	Servers as defined at S.No. 1.7 of Section-3	1						1
8	Servers as defined at S.No. 1.8 of Section-3		1	1	1			3
9	WINDOWS 2008 ENTERPRISE Edition	6	1	1	1			9
10	EXCHANGE SERVER 2010 ENTERPRISE & Forfront Threat Management Gateway 2010 SERVER	1						1
11	EXCHANGE SERVER 2010 STANDARD		1	1				2
12	ON LINE UPS OF 5 KVA RATING	1	1	1	1			4
13	BATTERIES FOR 3.1(a) for 60 MINUTES BACKUP	1	1	1	1			4
14	ROUTER For Chandigarh	1						1
15	Router For Sundernagar & Nangal Computer Centres		1	1				2
16	Router For Ganguwal & Slapper		1	1				2
17	Leased Line Modems G703 & V.35		4	4				8
18	LAN Extender	2	10	4	4		2	22
19	EDGE / DEPARTMENT/ BUILDING SWITCH							
A	SWITCH		9	6	4			19
B	1000BASE-SX Module Multi Mode		1	3				4
C	1000BASE-LX Module Single Mode		2					2

NOTE :

1. The above distribution of Hardware is indicative only and may vary slightly at the time of actual dispatch of material.
2. The passive networking components may be supplied at each location as per the requirement/plan

CONSIGNEE :

- 1 CHANDIGARH : PROGRAMMER, COMPUTER CELL, SLDC COMPLEX, IND. AREA PHASE-1, BBMB, CHANDIGARH-160002.
- 2 NANGAL : PROGRAMMER, COMPUTER CELL, DY. CAO BUILDING, BBMB, NANGAL- 140 124.
- 3 TALWARA : PROGRAMMER, COMPUTER CELL, CE/BEAS DAM BUILDING, SECTOR-2, BBMB, TALWARA.-144 216.
- 4 SUNDERNAGAR : PROGRAMMER, COMPUTER CELL, CE/BSL BUILDING, BBMB, SUNDERNAGAR DISTT. MANDI, HIMACHAL PRADESH -175 019.
- 5 JAMALPUR : PROGRAMMER, COMPUTER CELL, 220KV SUB-STATION, BBMB, JAMALPUR, LUDHIANA- 141 010.

TERMS AND CONDITIONS OF PURCHASE ORDER.

1. F.O.R/ EX-GODOWN RATE

The rates are F.O.R destination.

2. DELIVERY PERIOD

The supply, installation of items as stipulated herein shall be completed by the vendor within the period as under:

- | | | |
|------|---|---|
| i. | Servers & UPSs | With in 20 Weeks from the
date of receipt of order |
| ii. | Power Conditioning Equipment (UPS) | |
| iii. | Networking Components including cabling - Within 20 Weeks from the date of approval of the cable laying plan. The detailed plan shall be prepared by the firm's representatives within 4 weeks from the date of receipt of order & submitted for approval of the purchaser. The delay in the submission of drawings/plan by the supplier shall also invite the levy of penalty as specified in the Penalty Clause. | |

AVAYA/ EQUIVALENT Testing Certification

The submission of the AVAYA/Equivalent testing certification for network cabling shall not be linked with the above delivery period. However AVAYA/Equivalent testing certification shall have to be submitted within 6 months from the date of commissioning of the networks. A report after testing the various points (I/O and fibre) through pentascanner etc. may be submitted.

The installation at (i) above shall include one-time configuration changes/ settings as per Scope mentioned in the specifications.

In case the supplier is unable to complete whole or any item of supply within stipulated period, for recognized reasons of 'Force Majeure' mentioned in clause 3 below, he shall be responsible to furnish well in time sufficient documentary evidence to the satisfaction of the purchaser to prove the existence of conditions mentioned in the Clause 3, so as to justify grant of extension by the purchaser of the 'Delivery Period' mentioned above. Such extension will be granted by purchaser for the period for which the completion of supply is proved, by the supplier, to have been delayed for the said reasons due to 'Force Majeure'. In case of delay in delivery, the dispatches shall be made only after obtaining written consent of the purchaser.

3. FORCE MAJEURE

The supplier shall not be liable for any penalty charges due to delay in manufacture or delivery of material resulting from any causes beyond the supplier's reasonable control including but not limited to compliance with regulations, orders or instructions of Central/State or Municipal Govt. or Agency, thereto, acts of God, Acts of Civil & Military authorities, fires, floods, strikes, lockouts, freight embargoes, war risks, riots and civil commotion's. The supplier will seek extension of delivery period within three weeks of occurrence of such an event and clearly state anticipated delay in supply on account of such an event/events. On receipt of such request from the supplier, extension in delivery period may be granted for the period for which the completion of work is proved by the supplier to have been delayed for circumstances covered by reasons of 'Force Majeure' subject to further conditions that if the delivery period is likely to be extended by more than 60 days on account of any event, the purchaser shall have the option to accept any portion of the balance material and cancel the order for the rest provided, however, that if material had been manufactured exclusively for the purchaser under contract prior to the commencement of FORCE MAJEURE circumstances, it shall be accepted by the purchaser and the cancellation will be without any liability for damages on the part of the supplier and without any payment of compensation by the Board.

4. EXTENSION IN DELIVERY PERIOD

Any genuine delay in approval of technical detailed drawings, issuance of amendment of purchase order, conducting inspection and approval of inspection

test/tests certificates for allowing despatches etc. will count towards extension of delivery period by corresponding period other than admissible under Force Majeure conditions, if any, substantiated by the supplier and duly accepted by the Purchasing Authority.

Date of delivery shall be taken as 7th day after the date of readiness of material for inspection in case of purchase order upto Rs.5 lac and 14th day after the date of readiness of material for inspection in case of purchase order more than Rs.5 lac, provided the material offered has passed the inspection and proof of despatch of material within 7 days of the receipt of despatch authorization and road permit (wherever required) is given by the supplier. In case, however, the material fails during inspection at the works/site, as the case may be, either fully or partially or the material is not ready for inspection when the inspector visits the works for inspection, the re-inspection charges shall be recovered from the firm. The date of readiness of the material in this case will be reckoned with reference to the date from which the material/equipment is offered to be ready for the re-inspection provided the material passes the inspection that follows the offer. In case the material is not dispatched within 7 days of the receipt of dispatch authorization, date of delivery shall be taken as date of receipt of material by the consignee at site/store.

5. PENALTY CHARGES

If the supplier fails to abide by the provisions of clause 'Delivery period', he shall be liable to pay penalty @ 1/2% per week or part thereof of the ex-works delivery price excluding taxes & duties (but including freight & insurance charges where break-up of FOR Destination price is not available) of such portion of material as has not been delivered within the "Delivery period" subject to maximum of 10% of the contract value of the delayed/undelivered portion of the material.

6. TERMS OF PAYMENT

6A For equipment except one-time services, passive networking components & Labour Charges

100% advance payment against on proof of despatch of material by the Rail / Road (for short listed firms and Public Sector undertakings by any road transporter and for others by bankers approved Transporter). Before allowing 100% advance payment against Bank documents, a Bank Guarantee of the value of 10% of contract price shall be obtained from all firms & public sector undertaking, which shall remain valid for a period of one year from the date of final execution of the contract. The bank guarantee shall be furnished by the supplier one month before the commencement of delivery.

6B For one-time services / configuration changes

100 % payment of one-time configuration changes/ settings as per Scope mentioned in para-2.1.1 & para 2.2.1 of **Section-2: TERMS & CONDITIONS OF TECHNICAL BID** shall be made after completion of this scope.

6C For passive networking components and labour charges

- i. 70% payment shall be made upon receipt of material (passive networking components) at site in good condition.
- ii. 10% out of balance 30% payment of passive networking components and 90% payment of labour charges shall be released after completion of cabling, termination work etc.
- iii. The balance 20% payment of passive networking components subject to adjustment as per actuals and balance 10% payment of labour charges shall be made after measurement & pentascanning testing (deemed date of commissioning) of all the networks.
- iv. The payment of Avaya/Equivalent certification shall be made after the certificate is received & shall not be linked with the payment at S.No. i, ii and iii above.

7. CENTRAL SALES TAX/STATE SALES TAX

The Central sales tax/Punjab/Haryana/Himachal sales tax will be paid extra at actuals at the rates prevailing at the time of delivery but limited to the rates prevailing within contractual delivery period.

The supplier shall furnish original vouchers and/or following certificates duly signed by the supplier:-

- i) Certified that the transaction on which sales tax has been claimed/shall be included in the return submitted/to be submitted to the Sales Tax authorities for the assessment of the Sales Tax and the amount claimed from the purchaser has been/shall be paid to the sales Tax Authorities.
- ii) Certified that the goods on which Sales tax has been charged have not been exempted under the Central Sales Tax Act, the rules made there under and the charges on account of Sales Tax on these goods are correct under the provisions of the relevant Act, or rules made there under.
- iii) Certified that we shall indemnify the purchaser in case it is found at a later stage that wrong or incorrect payment has been recovered on account of the Sales Tax paid by us.
- iv) Certified that we are registered as a dealer under the Central Sales Tax and our Registration No. is_____.

8. EXCISE DUTY,OCTROI AND OTHER DUTIES

a) EXCISE DUTY

The payment of statutory excise duty will be made extra subject to actual proof of payment having been made by you to the Excise Department but limited to the rates prevailing within the contractual delivery period. The supplier shall also furnish following certificates duly signed by him while claiming payment of excise duty:-

- i) Certified that the sum of Rs._____(Rupees_____) towards Excise duty has been paid to the Central Excise Authorities towards despatch of (Name of material) affected from_____ Station_____ to_____ consigned to_____ Under R.R.No. _____ Dated _____ vide Bill No _____ dated_____.
- ii) Certified that the excise duty charged is at the prevailing rates & no part of the same is refundable. In case, any excise duty paid on this material is refunded to the supplier it will be passed on to the purchaser.
- iii) Certified that the goods on which Excise duty has been charged have not been exempted under the Central Excise Duty and the Central Excise Duty charged on these goods is not more than what is payable under the provisions of the relevant Act or rules made there under.
- iv) Certified that we shall indemnify the purchaser, in case it is found at a later stage that wrong or incorrect payment has been recovered on account of Excise duty paid to us.

(b) OCTROI & OTHER DUTIES/TAXES

Octroi and other duties/taxes, if levied on the finished goods at the station of despatch at the time of supply shall be paid at actuals subject to production of original payment documents and subject to the rates prevailing within the contractual delivery period, if the same have not been included in the quoted prices. To avoid any complications, with regard to Octroi at the destination station, the material shall be despatched in the name of consignee and not to self. However, OCTROI charges as applicable at the destination station shall be paid as per actuals subject to production of original payment documents and subject to the rates prevailing within the contractual delivery period.

9. NEGLIGENCE

If the supplier neglects to execute the work with due diligence and expedition or refuses or neglects to comply with any reasonable orders given in writing by the purchaser in connection with purchase orders or contravene the provisions of the purchase order, the purchaser may give 21 day's Notice in writing to the supplier to make good the failure, neglect or contravention complained of and should the supplier fail to comply with the notice within a reasonable time from the date of service thereof, in case of

failure, neglect or contravention capable of being made good within that time or otherwise within such time as may be reasonably necessary for making it good then and in such case the purchaser shall be at liberty to take the work wholly or partly out of the hands of the supplier and recontract at reasonable price with any other person or persons. In such an event, it shall be lawful for the purchaser to retain any such balance which may otherwise be due by him to the supplier on any account including the amount of Bank Guarantees and apply the same towards the execution of the whole or balance of the work so recontracted, as aforesaid. If, no such balance is due by the purchaser to the supplier or if due is not sufficient to cover the amount thus recoverable from the supplier, it shall be lawful for the purchaser to recover the whole or balance of the amount from the supplier by action of the law.

10. BANKRUPTCY

If the company shall commit any act of bankruptcy or being corporation commence to be wound up except for reconstruction purpose, or carry on its business under a receiver, the executors, successor or other representative in law of the estate of the supplier or any such receiver, liquidator, or any person in whom the contract may become vested shall forth-with give notice whereof in writing to the purchaser and shall for one month during which company shall take all reasonable steps to prevent a stoppage of the works, have the option of carrying out the contract subject to the supplier, providing such guarantee as may be required by the purchaser but not exceeding the value of the work for the time being remaining unexecuted. In the event of stoppage of the work the period of the option under this clause shall be fourteen (14) days only. Provided that should the above option not be exercised, the contract may be determined by the purchaser by notice in writing to the supplier and the same power and provisions reserved to the purchaser in the last proceeding clause of taking the work out of the supplier's hands shall immediately become operative.

11. REPLACEMENT OF REJECTED MATERIAL

- i) Material found damaged, substandard or defective or not conforming to the prescribed specification in any manner, at the consignee's end, shall not be accepted and intimation to this effect shall be given to the supplier and the purchasing office by the consignee. The Purchasing Authority shall promptly take up the matter with supplier/shall intimate the supplier to this effect and ask him to rectify or replace the defective substandard material forthwith and in any case within 60 days from the date of intimation or rejection of material, failing which the Board shall reserve right to get the defect/damages rectified at the supplier's cost or to dispose off such material and adjust the sale proceeds thereof, if any, against its claim on the supplier. All expenses involved in the replacement by way of handling, transportation, storage etc. shall be on supplier's account.
- ii) In respect of the defective/substandard supplies the date on which such a supply is replaced shall be reckoned as the effective date of delivery there against and the delay shall be worked out accordingly with reference to the date on which the supply was due as per terms of contract, for the purpose of determining penalties/charges recoverable under clause-5 above.
- iii) The provisions of sub clause (i) & (ii) above shall apply mutatis mutandis, to the material found substandard or defective during the period of warranty.

12. WARRANTY

The supplier shall be responsible to replace free of cost, with no transportation or Insurance cost to the purchaser up to the destination, the whole or any part of the material which in normal and proper use proves defective in quality or workmanship, subject to the condition that the defect is noticed within 60 months from the date, the material is commissioned/put to use by the end user, or 66 months from the date of dispatch whichever period may expire earlier. The consignee or any other officer of the purchaser actually using the material will give prompt notice of each such defect to the supplier as well as the purchasing authority. The replacement shall be effected by the supplier within a reasonable time but not exceeding 60 days. The supplier shall also arrange to remove the defective supply within a reasonable period but not exceeding 60 days from the date of issue of the notice in respect thereof, failing which the purchasing authority shall reserve the right to dispose off the defective material in any manner considered fit by it at the sole risk of the supplier. Any sales proceeds of the defective material after meeting the expenses incurred on its custody,

disposal, handling etc. shall, however, be credited to the supplier's account and set off against any outstanding dues of the purchaser against the supplier.

13. WARRANTY DEED

The supplier shall execute a warranty deed, on the standard Performa to be supplied by the purchaser, on a non-judicial stamp paper required for such deeds as per the relevant act of the state in which it will be executed and signed and shall be kept valid for a period of **60** months from the date the material is commissioned/put to the use by end user or 66 months from the date of despatch, whichever is earlier to cover the warranty period of the material to be supplied. The warranty deed shall be supplied immediately after placement of purchase order.

14. PERFORMANCE BANK GUARANTEE

The supplier shall furnish a performance Bank Guarantee (on a standard proforma to be supplied by the purchaser) to the tune of **10%** value of the contract to cover the satisfactory working of the material during the period of warranty as per clause-12 above and it shall also be kept valid till such time any claim of the purchaser is pending against the supplier. The performance Bank Guarantee shall be furnished by the supplier one month before the commencement of delivery.

15. TEST AND INSPECTION (For Equipment/Material excluding Passive Networking components)

The supplier shall also intimate the purchaser about the readiness of material for inspection and same shall be inspected within 15 days from the receipt of notice. In case the representative of the purchaser finds on arrival at the supplier's premises that the material was not ready for inspection and that the notice given by the supplier was in fructuous, the expenditure incurred by the purchaser on arranging for such inspection shall be recovered from the supplier. No material shall be dispatched without prior inspection and approval of test certificates by the purchaser unless otherwise directed. The inspected material shall be dispatched within 7 days from the date of receipt of instructions allowing dispatch of material. However, if the inspection is waived off by the purchaser, the supplier shall attach a copy of the Purchaser's letter waiving off inspection with the Railway Receipt or the receipted goods challan and the supplier shall be responsible for rectification of all defects noticed by the consignee after receipt of material.

16. TESTS & INSPECTION OF PASSIVE NETWORKING COMPONENTS

No inspection of passive networking components is required to be carried out prior to dispatch/ installation. However the vendor shall ensure supply and installation of these components of specified make only and shall carry out the testing of passive networking components for AVAYA/ equivalent Certification after installation

17. PACKING

All apparatus and equipment shall be securely packed for safe delivery at destination and supplier shall be responsible for all losses or damages caused or occasioned due to improper or defective packing. Double boxing to give extra protection to the equipment against mechanical injury shall be used, if required.

All parts requiring protection from moisture including polished parts which rust rapidly, shall be double boxed with trapper or in such other approved manner. All parts such as coils parts, containing coils for electrical machines. Instruments, relays, motors etc. requiring utmost protection against moisture shall be packed in metal lined sealed boxes with trapper or sisal Kraft paper or any other approved material inserted between metal lined box and the outer layer of boxing.

All boxes shall be marked with signs indicating the up and down sides of the boxes and also unpacking instructions considered necessary by the supplier.

The contents of the boxes shall have place marks corresponding to the number in the packing list to enable easy identification. The prices include packing charges also and as such, no extra payment shall be made on this account.

18. TRANSPORTATION, INSURANCE & HANDLING OF MATERIAL

The supplier shall be responsible for transportation, insurance and handling of material upto the destination station as per despatch instructions. The material shall be dispatched by Rail/Road "Freight Pre-Paid". The purchaser shall have the right to lodge claim/claims

for shortage/damages etc. if any, during transit with the supplier within 30 days of the receipt of material. The settlement of such claim with the underwriters shall be the supplier's responsibility. In such an event, the purchaser shall obtain an open Delivery and certification from the Railway/Carrier.

19. ARBITRATION

If at any time question, dispute or difference whatsoever, shall arise, between the purchaser and the supplier upon or in relation to or in connection with the contract either party may forthwith give to the other, notice in writing of the existence of such question, dispute or difference and the same shall be referred to award of (two) arbitrators one to be nominated by the purchaser and other to be nominated by the supplier or in the case of said arbitrators not agreeing then to the award of an umpire to be appointed by the arbitrators in writing before proceeding with the reference and the decision of the arbitrators or in the event of their not agreeing, of the umpire appointed by them, shall be final and binding on the parties and provision of "the Arbitration and Conciliation Act, 1996" of the rules there under and any statutory amendment/ modifications or re enactment thereof for the time being in-force shall be deemed to apply to and by incorporated in the contract.

Such a notice of the existence of any question, dispute or difference in connection with contract shall be served by either party within 180 days or the issue of receipt by the consignee for each consignment failing which all rights and claims under this contract shall be deemed to have been forfeited and absolutely barred.

The work under the contract shall reasonably possible continued during arbitration proceedings and no payment or payable by the purchaser shall be within on account of such proceedings.

20. CANCELLATION OF PURCHASE ORDER

The purchaser shall have the right to amend or cancel the order at any time before the receipt of intimation regarding manufacturing of material, if he is satisfied that the delay in execution of the order by the supplier is willfull and detrimental to the interest of the Board. In case where after the commencement of manufacture, there is willful delay on the part of the supplier to the despatch/manufacture of the material, the purchaser may cancel the order for whole/unexecuted portion after giving a notice of 15 days to the supplier.

21. JURISDICTION OF COURT

In case of any dispute between the parties, the courts at Chandigarh only shall have the jurisdiction to settle/decide and adjudicate upon such matters.

22. SIGNING OF PURCHASE ORDER

The successful tenderer will be furnished with three copies of the purchase order. Two copies shall be retained by the supplier. The third copy of the purchase order will be returned by the supplier to the purchaser after signing each and every page of P.O. by his authorized representative in token of the unconditional acceptance of the purchase order. The supplier shall also furnish documentary evidence that the signatory is an authorized representative of the supplier.

(WARRANTY DEED)

(To be executed on the appropriate value of Non-Judicial Stamp Papers)

This warranty deed made this day
the _____ between Messers (supplier's name)
through _____ hereinafter referred to as "The supplier" which expression
shall include its legal representatives, successors and assigns of the one part, and the
Bhakra Beas Management Board, Chandigarh through Chief Engineer/ Generation , a
statutory body constituted under Section 79 (1) read with Section-80 (6) of Punjab Re-
organisation Act, 1966 hereinafter referred to as " the Purchaser" which expression shall
include its successors and assigns of the other part.

Where as the Board has placed on the supplier P.O. No. _____
_____ for supply and commissioning of servers, UPSs, networking
equipment, facility management services etc. as specifically and fully described in the said
P.O. and whereas the above said P.O. has been accepted by the Supplier vide their letter
No. _____ thus constituting a legally enforceable contract
between the parties above named.

NOW THEREFORE THIS DEED WITNESSTH AND THE SUPPLIER HEREBY
WARRANTIES AS UNDER:-

That the supplier shall be responsible to replace free of cost, with no transportation
or insurance cost to the Board upto the destination, as specified in the said P.O. or the
Despatch instructions issued in pursuance of the said P.O. the whole or any part of the
material which in normal and proper use proves defective in quality or workmanship
subject to the condition that the defect is noticed within 60 months from the date of
commissioning of system or 66 months from the date of despatch, whichever period may
expire earlier. The consignees or any other representative of the Board actually using the
material will give prompt written notice of each such defect to the supplier. The
replacement shall be affected by the supplier within a reasonable time but not in any case
exceeding 60 (sixty) days. The supplier shall also arrange to remove the defective supply
within a reasonable period but not exceeding 60 (sixty) days from the date of issue of the
notice in respect thereof, failing which the Board shall reserve the right to dispose off the
defective material in any manner considered fit by it at the sole risk and cost of the
supplier. Any sale proceeds of the defective material after meeting the expenses incurred
on its custody, disposal, handling etc. shall however, be credited to the supplier's account
and set off against any outstanding dues of the Board against the supplier.

That the above provisions shall also equally apply to the replaced material. In case
the material is again found to be defective within a period of 60 months of its replacement,
it shall also have to be replaced similarly.

The supplier further declares that this deed has been executed by its lawfully
constituted attorney legally competent to sign and execute and has been stamped as
required under the relevant Act of the State in which it has been executed & signed and
that the warranty herein before contained shall not be affected by any change in the
constitution of the supplier.

In witness whereof the parties hereto have executed this deed on the date and year
first above mentioned.

Witness:-

- | | | |
|----|---|--|
| 1. | Signature: _____
Name & full address | For and on behalf of the supplier:
Signature: _____ |
| 2. | Signature : _____
Name & full address. | Name & Designation:- |

Witness:-

- | | | |
|----|---|--|
| 1. | Signature: _____
Name & full address:- | For and on behalf of the Board:-
Signature: _____ |
| 2. | Signature: _____
Name & full address: | Name & Designation:- |

PEROFORMA OF BANK GUARANTTE FOR OBTAINING 100% PAYMENT AGAINST DISPATCH DOCUMENTS (TO BE EXECUTED ON THE APPROPRIATE VALUE OF NON-JUDICIAL STAMPED PAPERS)

This agreement is made this _____ day of _____ between M/S (Banker's Name) _____ through ----- designation of the person signing the Bank Guarantee on behalf of the Guarantor), a company registered under the Companies Act, 1956/Banking Statute/ a body corporate constituted under the Banking Companies (Acquisition and Transfer of undertaking) Act V or 1970 having its registered office at _____ hereinafter called the "Guarantor" which expression shall unless repugnant to the context or meaning thereof include its successors and assigns of the first part, M/S _____ through (designation of the person signing The Bank Guarante _____ (on behalf of the supplier) a company registered under companies Act, 1956, having its registered office at (Address of Registered office _____) hereinafter called the "Supplier" which expression shall unless repugnant to the context or meaning thereof include its successors and assigns of the second part and the Bhakra Beas Management Board, Chandigarh through Chief Engineer/Generation, a statutory body constituted under Section 79 (1) read with Section-80 (6) of the Punjab Re-organisation Act, 1966 hereinafter called the 'Purchaser' which expression shall unless repugnant to the context or meaning thereof include its successors and assigns of the third part.

Whereas the supplier had, interalia, agree to supply to the Purchaser _____ (hereinafter called the said "system") on the terms and conditions contained in the Purchase Order No. _____ dt. _____ (hereinafter _____ called the said "Purchase Order".) placed by the Purchaser on the supplier and unconditionally accepted by the supplier.

And whereas under clause 14 of Terms and Conditions of Purchase Order (Annexure-XII) of the said Purchase Order the supplier is required to furnish a Bank Guarantee for a sum Rs. _____ (Rupees _____) being the _____ value of all the consignments of the said system on account of retention money, which but for this guarantee would be withheld by the Purchaser till such time that the said system contained in the purchase order is received in good condition by the Purchaser and in accordance with the specifications of the same and the said system has given satisfactory performance during its warranty period as per clause 12 of Terms and Conditions of Purchase Order (Annexure-XII) of the said purchase order and also till such time that any claim of the Purchaser is pending against the supplier, to guarantee the payment of the retention money on bill submitted against supply of the said system on order from time to time upto a maximum amount of the sum of Rs. _____ (Rupees _____)

And whereas at the request on the supplier the Purchaser has agreed not to retain 10% of the contract price of all the consignments and in lieu thereof to accept a Bank Guarantee equivalent to the 10% of the contract price of all the consignments from the guarantor for the aforesaid purposes & for the due performance of the said purchase order by the supplier on the terms & conditions herein contained. Now this deed, witnesseth and it is hereby agreed by and between the parties hereto as follows:

The Guarantor hereby guarantees to the Purchaser the quality, workmanship and design of the said system in accordance with the prescribed specifications and the terms of the said purchase order its satisfactory performance during the warranty period as per clause 12 of Terms and Conditions of Purchase Order (Annexure-XII) of said purchase order and agree to indemnify and keep indemnified the purchaser to the extent of Rs. _____ in the aggregate against all losses, damages, cost, charges and expenses which may be suffered or incurred by the purchaser on account of non-receipt of the said system in good condition or on account of any defect in the said system or on account of any breach on the part of the supplier of any of the terms and conditions of the said purchase order in the supply of and during the warranty period of the said system. The guarantor further agrees that the Purchaser shall be the sole judge whether or not the supplies have been made according to the prescribed specifications, design and workmanship and laid down in the said purchase order. and whether or not the said system has been received in good condition by the purchaser and whether or not the said system has given satisfactory performance during its warranty period and whether

or not the supplier has committed breach or breaches of any of the terms and conditions of the said purchase order and the extent of loss, damages, cost, charges or expenses suffered or incurred by the Purchaser on account thereof. The guarantor hereby guarantees and undertakes to release & pay immediately the amount of Rs._____ to the Purchaser on receipt of written instructions from the Purchaser and the supplier shall not have any right to interfere. The right to get the Bank Guarantee encashed shall rest with the Purchaser solely at its discretion without assigning any reason whatsoever.

The guarantor further agrees that this guarantee shall remain in full force and effect for 60 months from the date of its issue in the first instance. This guarantee shall be revalidated subsequently, if required, under clause 14 of the said purchase order so as to cover the Warranty period as per Clause-12 of the said purchase order and also till such time any claim of the Purchaser is pending against the supplier.

The guarantor also agrees and undertakes not to revoke this guarantee before the same is discharged as aforesaid except with the previous consent of the Purchaser in writing.

The Guarantor hereby further agrees that the Purchaser shall have the fullest liberty without affecting in any manner obligation of the guarantor hereunder with or without the consent of the guarantor to vary any of the terms of the said purchase order or to extend from time to time or to postpone for any time or from time to time any of the powers exercise-able by the Purchaser against the supplier and either to forebear or enforce any of the terms or conditions relating to the said purchase order and the Guarantor shall not be relieved from his liability by reason of any variations or any extension being granted to the supplier or for any forbearance, act or commission on the part of the Purchaser, or any indulgence by the Purchaser to the supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving the guarantor, nor shall it be necessary for the Purchaser to sue the supplier before suing the said guarantor for the amount/damages due under this deed of guarantee.

The guarantor hereby further affirms and declares that this guarantee has been executed by their lawfully constituted attorney legally competent to sign and Execute and has been stamped as required for such guarantees under the relevant Act of the State in which it has been executed and signed and the guarantee herein before contained shall not be affected by any change in the Constitution of the Guarantor (Bank) or the Constitution of the supplier.

The Guarantor hereby further agrees that any claim or dispute arising under this deed shall fall within the exclusive jurisdiction of courts at Chandigarh.

Notwithstanding, anything herein before contained the Guarantor's liability under this guarantee is restricted to Rs._____ (Rupees_____).The guarantee shall remain valid upto_____. Unless claim in writing is presented to the guarantor within six months from that date and if unpaid, a suit or action to enforce such claim under this guarantee is filed against the guarantor within said period of six months, all the rights of the Purchaser under the said guarantee shall be forfeited and the guarantor shall be released and discharged from all liability there under.

In witness whereof the parties hereto have put their perspective hands on the day and the year first above mentioned.

Witness:

- 1.
- 2.

For & on behalf of the Guarantor:

Signatures:_____
Name & Designation_____

Witness:

- 1.
- 2.

For and on behalf of the Supplier.

Signatures:_____
Name & Designation_____

Witness:

- 1.
- 2.

For and on behalf of the Purchaser.

Signatures:_____
Name & Designation_____

GURANTEED TECHNICAL PARTICULARS MAKE MODEL- ANNEXURE-VII		
Sr. No	Make/ model	(Make/Model Offered)
		HCL Infosystems Ltd.
1.1	Blade Servers (Type -1)	HP BL 460 C
1.2	Blade Servers (Type -2)	HP BL 680 C
1.3	Specification for High Performance,GPS based Network Time Server. (Network Protocols)	Symmetricon S 350
1.4	Cabinet/Chassis for Blade Servers with following configuration	HP C 7000
1.5	Backup Solution for Servers with the following details	HP / SYMMANTEC BACK UP EXEC
1.6	Rack	HP/HCL
1.7	Server (Database)	HP ML 350/HCL IGL 2701HC
1.8	Server for Talwara, Sundernagar & Nangal	HP ML 350/HCL IGL 2701HC
3.1	ON LINE UPS OF 5 KVA RATING WITH 60 MINUTES BACKUP (Including Batteries) (TRITRONICS/ AUTORONICA/ APC/ TATA LIEBERT/NUMERIC MAKE)	TRITRONICS/AUTORONICA/ NUMERIC/EMERSON
4.1	ROUTER For Chandigarh	CISCO 3945
4.2	Router For Sundernagar & Nangal Computer Centres	CISCO 2911
4.3	Router (For Ganguwal & Slapper)	CISCO 2911
4.4	LEASED LINE MODEMS (G.703 and V.35 pair)	ATRIE WIRESpan 3000/ANDA TELECOM ATP AM SPAN 2000 GM
4.5	LAN Extender	ATRIE WIRESpan WS 5300/ANDA TELECOM AT 6200
4.6	EDGE / DEPARTMENT/ BUILDING SWITCH	CISCO 2960 S